Vol. XXI New York—Thursday, September 30, 1909—Chicago No. 14

THE AUTOMOBILE

MUNSEYITES COMPLETE RELIABILITY

WASHINGTON, D. C., Sept. 29—Back into Washington this afternoon came the survivors of what was known as the "Frank A. Munsey Reliability Contest," these autos having made the journey from the "Capital City" to Boston and return, a distance of 1,282.2 miles, accomplished in seven running days, and mostly in weather that resulted in precarious highways except where the road construction had been of the most up-to-date kind. The route embraced the most important cities of the Atlantic States traversed, night stops including Philadelphia, Boston and New York City.

Of course, it is impossible at this moment to give a list of the winners, for these will not be announced until after Technicists Trego, Overpeck and Cassard complete their minute observations, which are likely to occupy a day or more. It is the intention of the management of the tour, and all contestants have been fully warned of it, to make this examination more than usually thorough.

It was natural that with the event promoted by one particular string of newspapers, it did not receive any vast attention from other sources; hence, the participants found that the Washington *Times*, Boston *Journal*, Baltimore *News* and Philadelphia *Times* were the only papers which gave front-page stories. In consequence, there were disappointments at the comparatively limited amount of publicity forthcoming, which, in one instance, caused a couple of withdrawals. Nevertheless, a commensurate amount of space was utilized in telling the story of the run, and the successful ones will have opportunity of exploiting their prowess.

The decidedly unfavorable weather conditions added most substantially to the difficulties of the task, which duplicated, in some degree, the strenuousness of this year's Glidden tour. The announcement of the complete score and penalizations will be forthcoming at the earliest possible moment.

When the contesting cars in the run checked in at Philadelphia at the close of the sixth day's running, Referee Trego announced that the standing of the cars would not be announced until after the final examination in Washington at the conclusion of the tour. Twenty-one cars still remain in the tour, the withdrawals since the departure from Boston being the two Croxton-Keetons. While it is expected several of the cars will have perfect road scores, the chances are all against any car having a perfect mechanical score when the technical committee finishes with the examination and measurement of the contesting machines. For severe road conditions no tours in the famous Glidden tour to Pittsburg compares with the Munsey contest. Rain has been the portion of the Munseyites for nearly a week and they were heartily glad to see the sun shine just after crossing the Staten Island ferry in the morning. This put new life into the tourists and they thoroughly enjoyed the run from New York to Philadelphia by way of Atlantic City.

After two ferry trips and a short jaunt across Staten Island, the tourists proceeded along the Eastern coast of New Jersey, nearly due south over the excellent though low roads of that State. Passing through the Amboys, many of the smaller but important towns were touched, including Lakewood, Tom's River, the county seat of Ocean county, Barnegat, Egg Harbor City, and so on into Atlantic City. Spending but a few hours in Philadelphia's playground, they turned northwest, and started out for the city itself, 57.4 miles away.

Connecticut Supplied Some Excellent Highway, Near Birdgeport

SECOND DAY: PHILADELPHIA TO MILFORD

132.6 MILES

Milford, Pa., Sept. 22—To-day's run was a veritable "joy-ride." Although the sun shone but a few minutes throughout the day and rain constantly threatened, it was not until all hands were within a few miles of this place that oilskins and rubber coats had to be resorted to. The roads—mile after mile of them oiled—were in ideal shape for fast work, but the committee, for some unknown reason, reduced the limit of the big cars to 18 miles an hour and the others accordingly. The result was that at each control there were long waits. Indeed, so heavily did time hang on its hands that the committee ordered an unofficial half-hour stop at Rittersville, where the Lehigh Valley Motor Club surprised the tourists with lunch and beverages.

At Allentown the first break was made in the line-up by the enforced

Referee F. H. Trego

withdrawal of Selden No. 34, by Owner-Driver Patterson, due to the receipt of a telegram requiring his immediate presence in Philadelphia to look after the details of a lawsuit. In the same city a serious accident occurred to Mrs. Hall, wife of the owner of Columbia No. 15. At a slippery right-angled turn at the foot of a hilly street the car skidded into the curb, dishing a wheel, splitting the car body and throwing Mrs. Hall against Observer G. B. Emerson, breaking her collar-bone. The observer was uninjured and came on to Milford in Croxton-Keeton No. 16, having been informed by Owner Hall that the car was withdrawn. Later the latter changed his mind, and, securing a new wheel, ordered Driver Jacobi to proceed, he staying in Allentown with Mrs. Hall. Jacobi was in a quandary as to passengers, but finally lived up to the rules by paying $5 apiece to two outsiders to occupy the tonneau as far as Milford. He arrived here about midnight at a cost of 354 demerits for lateness, and 28.7 for work and cost of material.

Corbin No. 18 met with a peculiar mishap. In some manner a small nut dropped into the differential and stripped the gears. Driver Goss managed to reach Allentown, where he wired to New York for new parts. By fast work he managed to complete repairs at 9.30 and pushed on to this place, arriving shortly after 1 o'clock in the morning.

Driver Behrens, of Maryland No. 11, saved a penalty to-day by quick thinking. On a long rise near the Delaware Water Gap his motor began to slow down owing to a short fuel supply. Quickly reversing his car to expedite the flow of gasoline from his nearly depleted tank, he backed slowly up the hill and managed to keep his engine going till a good Samaritan among the contestants let him have a spare five-gallon can he was carrying for emergencies.

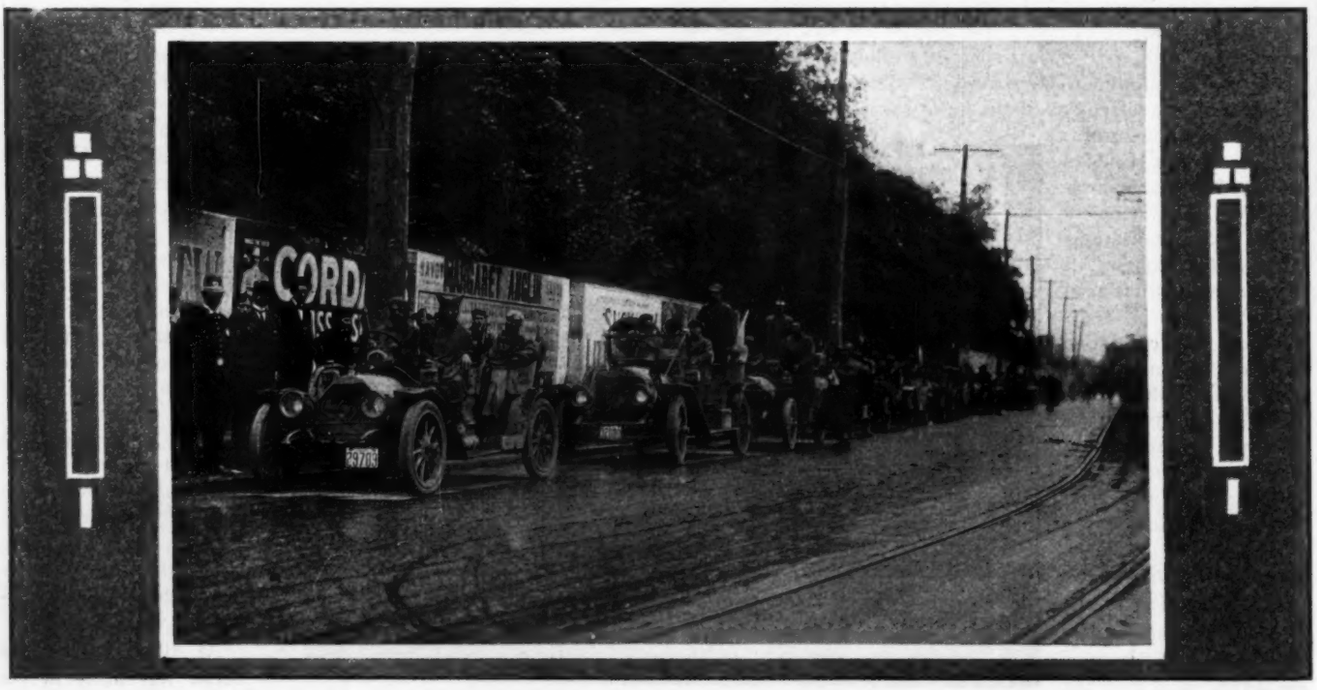
The excellent roads and the easy schedule were responsible for the comparatively few penalties inflicted on the second day. Two cars, however, were eliminated from the clean-score list—Pullman No. 37 in the third division, which was punished .8 for work on axle bearing and differential, 2.0 for work on clutch, .1 for examining plug, .6 for work on same and .1 for cost, a total of 3.6; and the American Simplex in the fifth division, which suffered to the extent of .1 for starting motor. No. 7 Ford added .3 to its first day's total—.2 for starting motor and .1 for adjusting carbureter. Washington No. 5 received an additional .1 for tightening fender bolt. "Billy" Knipper's Chalmers-Detroit No. 1 added 1.5 to its first day's total—1.2 for work on a broken fender, .1 for cost of material, .1 for oiling and .1 for starting motor, the latter due to a too-quick shut-down to avoid a collision with the chairman's car, which he had been following like a shadow all day. The heaviest sufferer of the day was Croxton-Keeton No. 16, whose 4.3 demerits were made up of 4.1 for work on universal joint and .2 for cost of material (the latter a double penalty for not carrying same in the car). In addition to the 1,000 points penalty for withdrawal, Selden No. 34 had a few tenths handed to it for work and cost of material, but just what they were was not announced.

Committeeman Overpeck

THIRD DAY: MILFORD TO ALBANY

158.5 MILES

ALBANY, N. Y., Sept. 23—The close of the third day of the run saw but an even half-dozen cars figuring in the clean-score class. Maryland No. 11 was ditched near New Baltimore as a result of a locked steering gear. The latter had been strained at Kingston, when Driver Behrens sent his car up a high curb to avoid an accident. While nearing New Baltimore a left turn of the hairpin variety was encountered and when the gear locked



Lining Up on Jerome Avenue, in New York City, for the Procession to the Waldorf-Astoria

Massachusetts State Highway Encountered Before It Had Received the Finishing Touches of the Roadsmaker

the Maryland went into the fence, tearing down half a dozen panels and coming up standing sidewise on the steep incline. It was remarkable that no one was hurt. The angle at which the car stood when finally stopped was so acute that the exertion of but a few pounds would have sent it bottom-side up. Jesse L. Cassard, Jr., of Baltimore, a member of the technical committee, who was a passenger on the car, was projected 20 feet down the hill, but came off unscathed, apart from the loss of nerve natural to such a mishap. He will train it to Boston to-morrow. The car suffered a badly bent axle and additional injury to its steering gear, but it was reported to-night that the crew hoped to get the car out and fixed up in time to get to Boston a day behind the run.

Washington No. 5 was also disabled. The drive shaft kept slipping out at the universal joint until, when Athens was reached, the crew decided to stop at a blacksmith shop and make a part which was necessary to a permanent repair. Observer Howard L. Cole left the car and came on to this place, but it is reported that the Washington will continue as soon as repairs are completed.

Twelve miles out of Newburg Driver McBurney, of Matheson No. 27, was threatened with a shotgun by an irate farmer, some of whose poultry was immolated by an early car. He looked as if he meant business, too, but McBurney, after he got close to him, threw on his high and bounded away, all hands meanwhile ducking to avoid the shot which they thought was surely coming.

The rain, which began yesterday, continued intermittently throughout the day until Catskill was reached, when the tourists ran ahead of the storm, which was apparently headed in the same direction, for in some sections the roads were inordinately dusty. From oilskins and tire chains all the morning to dusters in the afternoon, the transition was so sudden as to excite remark, and the appearance of cars and passengers as a result of the combination was harrowing.

Coming up the Hudson from Newburg, a forage pack train of 73 mules in charge of a squad of United States cavalry was encountered. The mules seemed to object strenuously to the presence of the cars, and several of them gave indication of registering their objections in the manner common to their kind. But the kind-hearted sergeant in charge solved the problem of the passage of the cars past the long line of animated stubbornness by detailing one of his men to convoy each car to the front.

"Billy" Knipper, driver of Chalmers-Detroit No. 1, in which THE AUTOMOBILE man had a seat, showed the effects of his recent Southwestern pathfinding experiences by the clever manner in which he avoided a mix-up with a female bovine with a crumpled horn. As the blue car came along, Bossy, which was one of a "flock," lowered her head and made a rush. "Billy" saw a bull-fight down in Mexico, and, waiting till the proper moment, dodged his car around the astonished cow in a manner which would have made an expert matador turn green with envy. At that, the crumpled horn came near hooking the rear wheel.

Referee Trego received last night from Charles J. Glidden a telegram congratulating him and the other officials on the success of the run up to date and expressing his regrets at his inability to form one of the party.

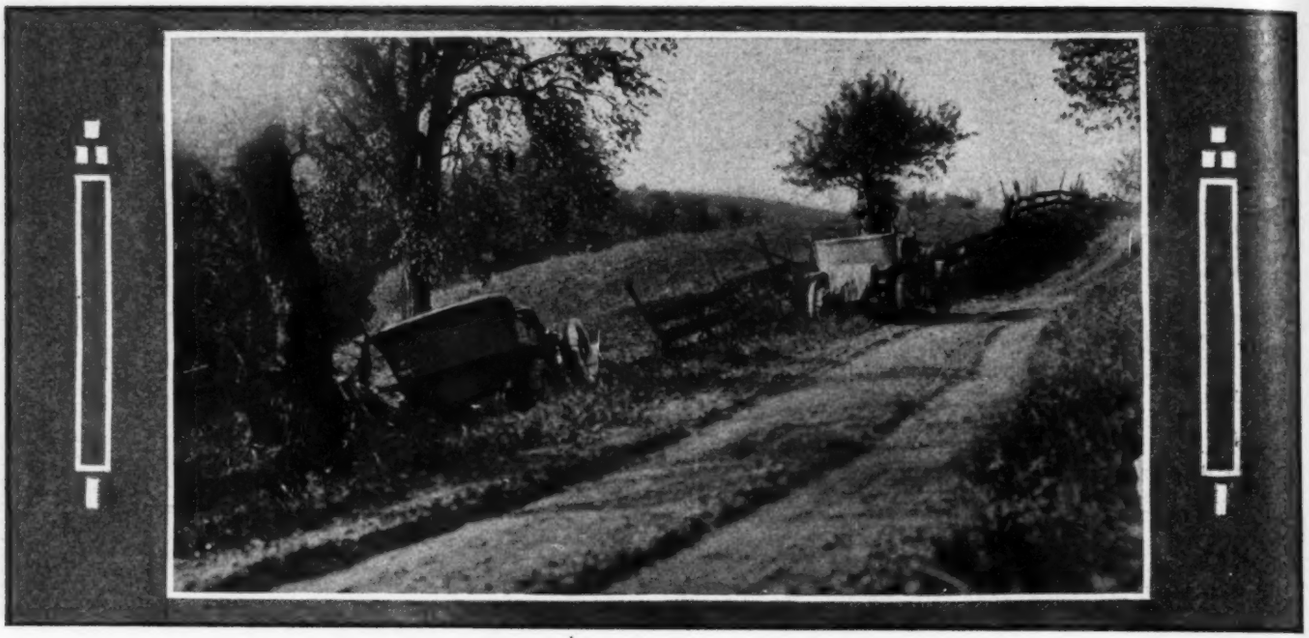
The only foreign car in the run, the Renault "20-30," is giving an excellent account of itself. Driver Leo Shaab lands his car among the leaders at every control, and withal drives so carefully that he is among the very, very few who have not as yet been compelled to get busy on tires.

The little 18-20 Autocar truck, as usual, was on hand early this evening with the extra baggage. Driver Thacher reports an utter absence of trouble up to date.

To-day, for the first, time began to figure prominently in the penalizations. As a starter, the committee figured up a total of 382.7 for the Columbia No. 15, which accumulated that high total as a result of its Allentown accident. Of this amount 354 points were for late arrival, the remainder being made up of 25.7 for work and 3.0 for cost of material. The little Hupmobile No. 29 added .4 for work in adjusting carbureter. Reo No. 26 left the clean-score class by reason of 4 points penalty for as many minutes' lateness in reporting at Albany.

Pullman No. 12, in addition to 30 points for late arrival at Albany, was penalized 36.7 for work on fanshaft and .6 for cost of material—a total of 67.3 for the day. Crawford No. 24 was another to leave the clean-score class on the third day, its observer's card showing work on lamp bracket to the extent of .3 and .1 for starting motor. Washington No. 31 accumulated 31.2 demerits during the day—31 for late arrival here and .2 for starting motor. The 2.2 collected by its sister, Washington No. 32, were 2 for late arrival here, .1 for starting motor and .1 for work on springs.

Croxton-Keeton No. 16 had spark-plug trouble during the day, which cost it 1.1 points penalty—.9 for work and .2 for cost of material. Matheson No. 27 also gathered 1.1 demerits for the day by reason of work on mud-pan to the extent of .8; labor



An Incident Near Baltimore, Where One Car Demolished a Bit of Fence

on fender, .2, and cost, .1. Pullman No. 37, which failed to report here this evening, was withdrawn, the car being shipped to New York from Saugerties by boat. It is understood that the cause of the withdrawal was trouble with the rear axle.

FOURTH DAY: ALBANY TO BOSTON

194.2 MILES

BOSTON, Sept. 26—The fourth leg of the run was a veritable mud plug. Eleven hours of rain, which increased in severity the nearer the Hub was approached, made the going anything but comfortable to the tourists, although, fortunately, the roads were excellent, being especially good between Springfield and Boston. None of the six clean-score cars suffered penalization, and despite the downpour the drivers were so careful that no less than 17 of the 23 cars still in the run scored clean for the most hazardous day thus far.

Jacob's Ladder, that succession of bumps over the backbone of the Berkshires, came near proving the undoing of several of the clean-scorers. During a furious downpour they were blocked by one of the Washingtons, which slipped into the ditch and partly blocked the road. At one time there were a dozen cars endeavoring either to slip around the obstruction or quietly clinging to their places on the slippery mountain, confident that in the event of lateness at controls a wise referee would absolve them from punishment. Several of them stalled motors endeavoring to get around, the ditch being of such depth that it required the services of man-power to get the wheels on comparatively solid ground again. Even these were let off scatheless.

So heavy was the rain and so muddy the clothes and hands of drivers, observers and passengers, who all helped the ditched car on to terra firma, that the observers' cards were in many instances undecipherable. Referee Trego and his assistants had their own troubles calculating the penalties, but by questioning the observers they managed to get the facts.

Washington No. 31 rolled up 358.1 demerits for the day, due to a skid into a telegraph pole at a right-angled turn in Westfield, outside of Worcester. The resultant bent axle had to be taken out, put in the fire at a nearby blacksmith shop and straightened before the car could proceed.

Unlucky Maryland No. 11 added 118.6 to its already large total, due to a bent axle following a skid. The car did not get away from Coxsackie, where it was ditched, until 4 o'clock Saturday afternoon, and Driver Behrens, who had had no sleep for 36 hours, kept right on, reporting at Albany at 5.19 and at Boston at 6.15 A. M. Sunday, after an all-night drive over the length of Massachusetts.

Columbia No. 15 suffered from a broken connecting rod, which delayed the car over eight hours and rolled up a penalty of 567.3 points for the day. The E-M-F pilot car lost a wheel and was held up for many hours, throwing all the confetti work on its confrere, the Midland. The irrepressible and ubiquitous Spooner, on whom all the photographic work has fallen since the Lazarnick representative abandoned the run at Philadelphia, was compelled to stop work absolutely, owing to the weather, and Joe Matson, relieved of the necessity of stopping frequently, drove "Mike the Tramp" through from Albany to Boston in 9 hours 40 minutes.

Various contestants reported four different runaways, but no fatalities. One farmer, whose motor shied at Chalmers No. 1, is minus a wagon and 80 quarts of milk. Although his horse disappeared rapidly over the landscape, he was fair enough to acknowledge to the tourists that "it hain't your fault; that 'ere skittish mare hain't no good nohow."

When the tourists arrived at Boston, Mr. Glidden took the officials in tow and dined them at the Somerset, and later at the impromptu smoker held by the Bay State Automobile Club for the entertainment of the visitors spoke entertainingly of his ballooning experiences. Saturday afternoon the Munsey people acted as hosts at a shore dinner at the Relay House at Bass Point, Nahant. On the way a stop was made at Fort Warren, where the tourists were greatly entertained by the explanations of coast defense tactics as very lucidly explained by two very pleasant officers. On the trip from the fort to Bass Point the small steamer which was chartered for the trip was shaken up so severely that not a few of the tourists began to feel qualms before the tiny craft pulled into the wharf, and as a result about a fourth of the party returned to the Hub by trolley, afraid lest they might lose the good dinner their hosts had provided.

Despite the storm, penalties were not so numerous as on any of the preceding days. In the third division Washington No. 5 was given .6 demerits—.5 for work on the propeller shaft and .1 for starting motor. The 358.1 rolled up by its sister car, No. 31, was mostly for the delay occasioned by a bent axle—340 points—the remainder being made up of 18 points for work and .1 for starting motor. Of the Maryland's total of 118.6, 1 was due to lateness in checking in, 117.5 for work on a bent axle and .1 for starting motor. Columbia No. 15, which now has nearly a

thousand demerits chalked up against it, accumulated over half of that large total on the fourth day's run, the 567.3 bad marks being made up of 493 points for lateness at the Boston checking station and 74.3 for work on a broken connecting rod. Matheson's 1.3 was for work on one of the springs, the cost penalty to be added when the run reaches Washington, the price catalogue having been left at the capital.

FIFTH DAY: WILLIMANTIC, CT., TO NEW YORK

NEW YORK, Sept. 27—Twenty-one of the 23 cars remaining in the contest reported here before dark this evening. When the run pulled up at the Waldorf-Astoria the participants were met with an invitation from Frank Munsey to a banquet in the Astor room at 7 o'clock sharp. As a result there were no penalties posted for the day, the officials declaring after the symposium that they were too exhausted to work on mere details. The banquet was one of the pleasantest entertainment features of the tour. After coffee and cigars, Mr. Munsey opened the speechmaking by disclaiming all credit for promoting what has proved such a successful tour, giving the honors to his lieutenants in the various cities in which the Munsey papers are located. He appointed Robert H. Davis toastmaster, the latter introducing the various speakers in a series of sallies replete with a dry humor which was particularly taking. Chairman Trego told the many non-participants present just what a reliability contest means and how it is conducted. Frank Presbrey, who was introduced as the author of the famous Kansas big corn story, was introduced as "the greatest liar of the century," and proceeded to make good, finishing up by congratulating the promoters on evolving a scheme which gathered together such a fine-looking body of men.

At 8.05 o'clock the Philadelphia *Evening Times*, containing an account of the day's run, was distributed to the banqueters, which brought forth much sarcasm from Toastmaster Davis anent Quaker City slowness. Editor Taft, of the Philadelphia paper, successfully defended his town against the aspersions of the discomfited Gothamite and publicly introduced Drivers Aiken, Matson and Knipper to Mr. Munsey.

E. D. Shaw, editor of the Washington *Times*, called attention to the fact that in 1893 Mr. Munsey had written of the future of the automobile in a vein which, in the light of present-day conditions, stamped him as a prophet. Arthur Newmyer, also of the Washington *Times*, and chief checker of the run, told of the numerous entertainments furnished the tourists en route. Colonel McLane, of Canada, a personal friend of Mr. Munsey, told how the latter "got his nerve" by fast driving during a recent tour in France.

Mr. Munsey wanted it particularly understood that the idea in promoting the present tour was not so much for its advertising value as for its virtue as a journalistic "stunt." He promised a repetition of the run next year and finished by complimenting the participants on their endurance and good humor in the face of elemental conditions that were little short of disheartening.

TABLE OF PENALTIES

No.	Car	1st Day	2d Day	3d Day	4th Day	5th Day	6th Day	7th Day
	First Division							
7	Ford	1.7	.3	0	0	—	—	—
29	Hupmobile	.2	0	.4	0	—	—	—
	Second Division							
9	Maxwell	0	0	0	0	—	—	—
26	Reo	0	0	4.	0	—	—	—
	Third Division							
5	Washington	.2	.1	*	.6	—	—	—
12	Pullman	0	0	67.3	0	—	—	—
24	Crawford	0	0	.4	0	—	—	—
31	Washington	.1	.1	31.2	358.1	—	—	—
32	Washington	0	0	2.2	*	—	—	—
37	Pullman	0	5.4	1000.	Withdrawn			
	Fourth Division							
1	Chalmers-Detroit	.2	1.5	0	0	—	—	—
11	Maryland	0	0	*	118.6	—	—	—
13	Pullman	0	0	0	0	—	—	—
14	Spoerer	.3	0	0	0	—	—	—
15	Columbia	.1	382.7	0	567.3	—	—	—
16	Croxton-Keeton	.5	4.3	1.1	0	—	—	—
18	Corbin	0	*	0	0	—	—	—
20	Winton Six	4.1	0	0	0	—	—	—
30	Marmon	0	0	0	0	—	—	—
34	Selden	.2	1000.	Withdrawn				
36	Elmore	0	0	0	0	—	—	—
	Fifth Division							
17	Croxton-Keeton	0	0	0	0	—	—	—
21	American Simplex	0	.1	0	0	—	—	—
	Sixth Division							
27	Matheson	.4	0	1.1	1.3	—	—	—
28	Renault	0	0	0	0	—	—	—

*Not yet computed.

Even in Massachusetts, this Being Near Warren, the Contestants Had Rough Going

The "S" Turn Near Laurel, Long Island, that Presented Some Difficulties Even to Experienced Drivers.

CHEVROLET DRIVES 70 M. P. H. IN LONG ISLAND DERBY

RIVERHEAD, L. I., Sept. 29—The Long Island Stock Chassis Derby is now history, marred by one fatality and noted for its exceptional demonstration of speed. Louis Chevrolet in his victory in class 4 with the 30-horsepower Buick, traveled at a speed which was close to 70 miles per hour, this being the greatest sustained flight ever accomplished in an American road race.

The event for big cars was taken by Ralph DePalma, a driver of established reputation, whose Fiat outlasted its opponent and covered the 227.5 miles at a pace of 63.35 miles per hour. It was during this session of the race that Herb Lytle, a driver of long experience besprinkled with numerous close calls, skidded and overturned at a bend in the road, seriously injuring himself, while his mechanic died as a result of the unfortunate affair, very shortly after the accident happened.

Unquestioned interest existed in class 5—$851 to $1,250—which resulted in a double victory for the new Maxwell Q. The winning car went the 91 miles in 53.9 M.P.H., with the second Maxwell not far behind.

Despite the ideal fall weather, the attendance was small, though there was splendid racing. Fifty per cent. of the profit was to have been divided among the winning drivers, who were represented by George Robertson. Unfortunately, there will be a deficit instead of a profit, and, of course, all that the drivers will get will be the cups won in their respective classes.

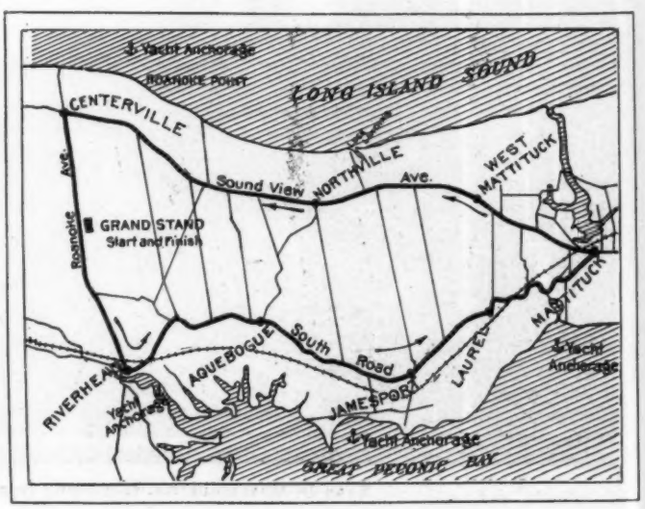
The timing was taken care of by A. P. Warner's time-recording instrument, presided over by the inventor himself, assisted by the members of the New York Timers' Club.

Suffolk County, which adjoins Nassau County, scene of the Vanderbilt Cup races, wanted an automobile contest, and so indefatigable Senator Morgan was prevailed upon to assume the burden of its conduct. A 22¾-mile triangular course was laid out with two 9-mile stretches, and the grand stand located a couple of miles from Riverhead, which had been the storm center of the miniature Vanderbilt. Proceeding thence easterly along the shore of Great Peconic Bay to Mattituck, a sharp turn and a westerly road led along the shore of Long Island Sound to Centerville. From there a three-mile straightaway led past the grand stand, located midway between Riverhead and Centerville.

Five classes, arranged according to price and not piston displacement, were provided for, the sum total of starters being 15, divided as follows:

	Car	Driver
$4,001 and over.....	Rainier	Disbrow
	Mercedes	Armstrong
	Fiat	DePalma
$3,001 to $4,000.....	Rainier	Lund
	American	Hughes
$2,001 to $3,000.....	Palmer & Singer.....	Lescault
$1,251 to $2,000.....	Sharp Arrow.....	Sharp
	Chalmers-Detroit	Droge
	Buick	Chevrolet
	Buick	Burman
$851 to $1,250.....	Maxwell	See
	Buick	Finch
	Maxwell	Doorley
	Maxwell	Costello
	Overland	Riess

It was a scantily covered stand that saw the start at 9 o'clock, though the parking place contained several hundred cars. Around



Map of Long Island Derby Course—22.75 Miles

the course the spectators numbered thousands, to watch the passing of the speed craft without expense.

Lund's Rainier was protested in the matter of price in Class 2, and while the case will go to the A.A.A. contest board, the car was transferred to Class 1, and its time taken for both 10 and 8 laps.

It was anticipated that the big Mercedes, once the property of W. K. Vanderbilt, Jr., and now owned by candy-maker Loft, would supply the most plentiful speed, which it did with an opening round in 19:01, a race approaching 65 miles per hour. De Palma's Fiat did the circuit in 22:12. Anxiously Lytle was waited for, but came not, and the meager report finally arrived that the Apperson had met with disaster and turned over near Mattituck. Disheartening news ultimately came that both Lytle and Bates were badly injured, the latter fatally. A skid from the partially-crowned road at a bend while traveling at top speed, was the only explanation of the accident which included colliding with a telephone pole. Physicians were quickly summoned but Bates was beyond aid, though an examination of Lytle resulted in the report that his recovery was almost certain.

During its second round the big Mercedes had an innings of tire troubles which made frequent replacement necessary and gave the lead temporarily to Disbrow's Rainier. In the third lap, the German-built car came back with 18:49, which made a lead of over a minute on De Palma's Fiat. In the next whirl, the Italian closed up some of the gap, the two being only 23 seconds apart. In the fifth lap the Mercedes had engine difficulty which caused the passing by the Fiat.

News of the Apperson catastrophe reached the grand stand just as the ailing Mercedes drew alongside its pit. Mrs. George W. Loft had been much upset by the information, and making her way to the car directed that it be withdrawn at once. Barring unusual trouble, this left the Fiat apparently a sure-enough winner, for the others were a long ways behind.

While the big cars were going the greatest distance, the smaller classes were having some interesting fights. In Class 4 the Buick of Chevrolet evolved as the startling winner at a pace which averaged 70 miles per hour. Burman, with another Buick, figured as the runner-up, though only 10 seconds behind.

In Class 2, Lescault's Palmer & Singer proved a winner practically unopposed, its opponent, the American driven by Hughes failing to make much of a fight, owing to cooling difficulties.

The only contestant in Class 3, W. H. Sharp's Arrow, driven by its maker, supplied an average of 63.6 miles per hour, which was an exceptionally good performance.

In Class 5, the littlest fellows of the race, the two Maxwells, captured the first two places, Arthur See's Model Q going the route in 53.9 miles per hour. J. Finch's Buick ran third.

SUMMARY OF RESULTS IN LONG ISLAND STOCK CHASSIS DERBY, RIVERHEAD, L. I., SEPT 29, 1909

CLASS 1—$4,001 AND OVER—10 LAPS—227.5 MILES

No.	Car	H.P.	Driver	1	2	3	4	5	6	7	8	9	Finish
3	Fiat	45	Ralph De Palma	22:12	46:00	67:12	89:26	110:49	132:39	153:35	176:10	197:16	218:35.6 avge., 62.35 m.p.h.
8	Rainier	45	C. H. Lund	31:06	55:45	77:45	99:48	133:26	156:06	179:16	206:50	Still running.	
1	Rainier	50	L. A. Disbrow	22:42	44:35	66:35	108:26	132:24	158:33	191:17	Still running.		
2	Mercedes	90	G. M. Armstrong	19:01	45:48	64:37	89:03	128:28	Withdrawn.				
4	Apperson	50	H. H. Lytle	Met with accident.									

CLASS 2—$3,001 TO $4,000—8 LAPS—182 MILES

7	Palmer & Singer	6-60	F. Lescault	21:21	41:26	63:42	85:09	106:36	133:18	157:03	179:04	Avge., 61 m.p.h.
5	American	50	H. Hughes	33:27	62:41	90:55	138:24	182:41	215:14	Still running.		

CLASS 3—$2,001 TO $3,000—6 LAPS—136.5 MILES

9	Sharp Arrow	40	W. H. Sharp	21:24	42:33	63:29	84:29	105:36	129:02	Average, 63.6 m.p.h.

CLASS 4—$1,251 TO $2,000—5 LAPS—113.75 MILES

11	Buick	30	Louis Chevrolet	19:43	39:46	60:55	78:35	97:36	Average, 70 m.p.h.
12	Buick	30	Robert Burman	19:56	39:49	59:59	83:32	106:02	Average, 64.14 m.p.h.
10	Chalmers-Detroit	30	H. F. Droge	30:03	60:01	89:41	119:18		

CLASS 5—$851 TO $1,250—4 LAPS—91 MILES

15	Maxwell	22	Arthur See	25:49	51:12	76:15	101:22	Average, 53.9 m.p.h.
18	Maxwell	22	Thomas Costello	26:23	52:06	78:07	104:13	Average, 52.38 m.p.h.
16	Buick	18	J. Finch	27:36	54:31	81:27	135:23	Average, 40.32 m.p.h.
17	Maxwell	22	M. Doorley	27:10	53:25	Dropped out.		
19	Overland	28	E. L. Riess	31:52	133:59	Withdrawn.		

SOME NEW BOOKS FOR AUTOMOBILISTS

"Italian Highways and Byways from a Motor Car"—This pleasantly rambling narrative of a rambling automobile tour through Italy comes from the pen of Francis Miltoun, whose work may often be found in these pages. Although the tour and its itinerary form the framework of the story, let it not be imagined that the author has bound himself to a dry recital of incidents and route book details. Far from it; he philosophizes at length, and most enjoyably, on the inner nature of the Italian, his liking for red wine, macaroni and *ravioli*, his roads, inns, and bath tubs. Of the conventional traveler's diary, nothing at all; Mr. Miltoun would far rather discover one new castle than "do" a hundred listed in Baedecker, and he pokes mild fun at the hurried and "conducted" tourist, be he English, German, or American. Also he delights in unearthing bits of medieval history, tales of a robber baron or a stolen bride, which give a romantic charm to each new-found castle.

The book itself is worthy of its contents; strikingly printed on rough-edged, cream-tinted paper, it is illustrated with a multitude of drawings and water colors by Blanche McManus. There are no less than eight full-page colored plates, and any number of full pages in half-tone, besides maps and plans. L. C. Page & Co., of Boston, the publishers, have good reason to be proud of their part of the work.

"Heures du Grand Nord"—The name of Georges Dupuy is familiar to every reader of THE AUTOMOBILE, and the word that he has written a book on his experiences in the United States makes one look forward to more of his delightfully original comment on us and our ways, that happy mingling of good-natured criticism and whole-hearted approbation, which really enables us "to see ourselves as others see us." Unlike the average European who spends a week in this country, and then, returning home, writes a volume of "impressions" or "thoughts" ridiculous in their immaturity and ignorance, M. Dupuy is thoroughly familiar with his subject. He has spent much time among us, is acquainted with our manners and customs, and, if not always approving, at least is sympathetic.

The subject-matter of the volume, to be more explicit, is taken from M. Dupuy's experiences in Canada and Alaska, especially in the gold mining regions. His little stories are related with a naiveté of style, a simple and unaffected realism, which would do credit to many a more famous author. Incidentally, M. Dupuy takes a fling at our roads. One of them he mistook for a drainage canal. The volume contains 280 pages of witty and entertaining anecdote, illustrated moreover with two full-page drawings by Blanche McManus. The publisher is the Société d'Imprimerie, 71, rue de Rennes, Paris.

Some Forest Giants That Are Kin to the California Redwoods

TO the automobilist, the Island of Vancouver offers the most fascinating of all countries for his favorite recreation. There are three basic necessities in automobiling, without which the sport cannot be enjoyed to its fullest. These may be set down in order of importance as follows: good roads, good weather, and beautiful scenery. The question of accommodations is also one of importance, but considering the ability of the average motor car in the way of carrying capacity, it is not of such vital importance as the first three named.

Vancouver Island has the best roads on the American continent. They may possibly be surpassed in mere highway excellence, as roadbeds, in the Old World, but they more than make up for any possible lacking in this respect by the magnificence, variety, and beauty of the scenery along and around them. They are natural boulevards, and the equability of the climate renders the keeping of them in perfect repair a matter of comparatively little labor. New roads are being opened up in a number of different directions, penetrating hitherto untouched cloistered spaces of exquisite loveliness, and it is nothing more than truth to say, that Vancouver Island has in its various highways and grandeur of scenery, the very Mecca of motor car enthusiasts. The roads through the island, starting from Victoria, are almost numberless in extent and variety. The Ocean Beach drive, taking the sightseer to the docks along Dallas road, through the famous Beacon Hill park, and along the beach to Oak bay, and from there back to Victoria by way of Oak bay and Rockland avenue, is a run unequaled in North America. A view of the Olympic range across the Straits of Juan de Fuca, as seen from the crest of Beacon Hill park, is one that, once seen, will never be forgotten. The blue vastness of the straits, dotted here and there by sails, or streaked with the smoke from passing smoke-stacks, backed by the towering steeps of snow-clad mountains, is a picture of which there is no double in the world. The Orchard drive is another incomparably beautiful drive, taking the traveler through a section of country that is fast being turned into splendid fruit farms. Here and there, the sea and glimpses of mountains add variety to the journey, while the golden blaze of Scotch broom, garlanding the hills, seem like so many wreathes of sunshine, clustering thickly in their yellow splendor.

To Douglas mountain and Cordova bay is another splendid drive, as is also the famous run to Esquimalt, where the navy dry docks are located, and close by the fortifications of Fort Macauley. To North Saanich, Saanichton, and Sidney, is another splendid drive, taking the visitor through a magnificent stretch of agricultural country, with the sea close at hand. To Albert Head by way of the Gorge road, Colwood, Happy Valley, and Metchosin, is another favorite run from Victoria, and here fruit farms and forests, ocean and valley, make a panorama of never-ending beauty. To Goldstream is another magnificent drive. Shawnigan lake, Duncan, Cowichan lake and bay, Maple bay, and other places can be reached on perfect automobile roads, with many excellent hotels and stopping places all along the route. The city of Nanaimo, with its herring and salmon fisheries, its coal and mining industries, is another point of interest very much frequented by the automobiling travelers, and all along and through these latter points, fishing, shooting and sea bathing, can be enjoyed. For a more extended trip, the run to Alberni, by way of Nanaimo, will take the automobile traveler into a country whose beauties far surpass in reality the world famous Alpine scenery of Switzerland. Sproat Lake has been termed the "Lake Lucerne of Vancouver Island," being similar to that lake in shape, but far outstripping it in natural beauty. Grand Central lake, also in the neighborhood of Alberni, is another magnificent sheet of water, and both these lakes are in the close vicinity of some of the most wonderful timber in the world. All through the Alberni district the fishing is superb, and the roads are the finest.

Weather and Scenery All That Can Be Desired

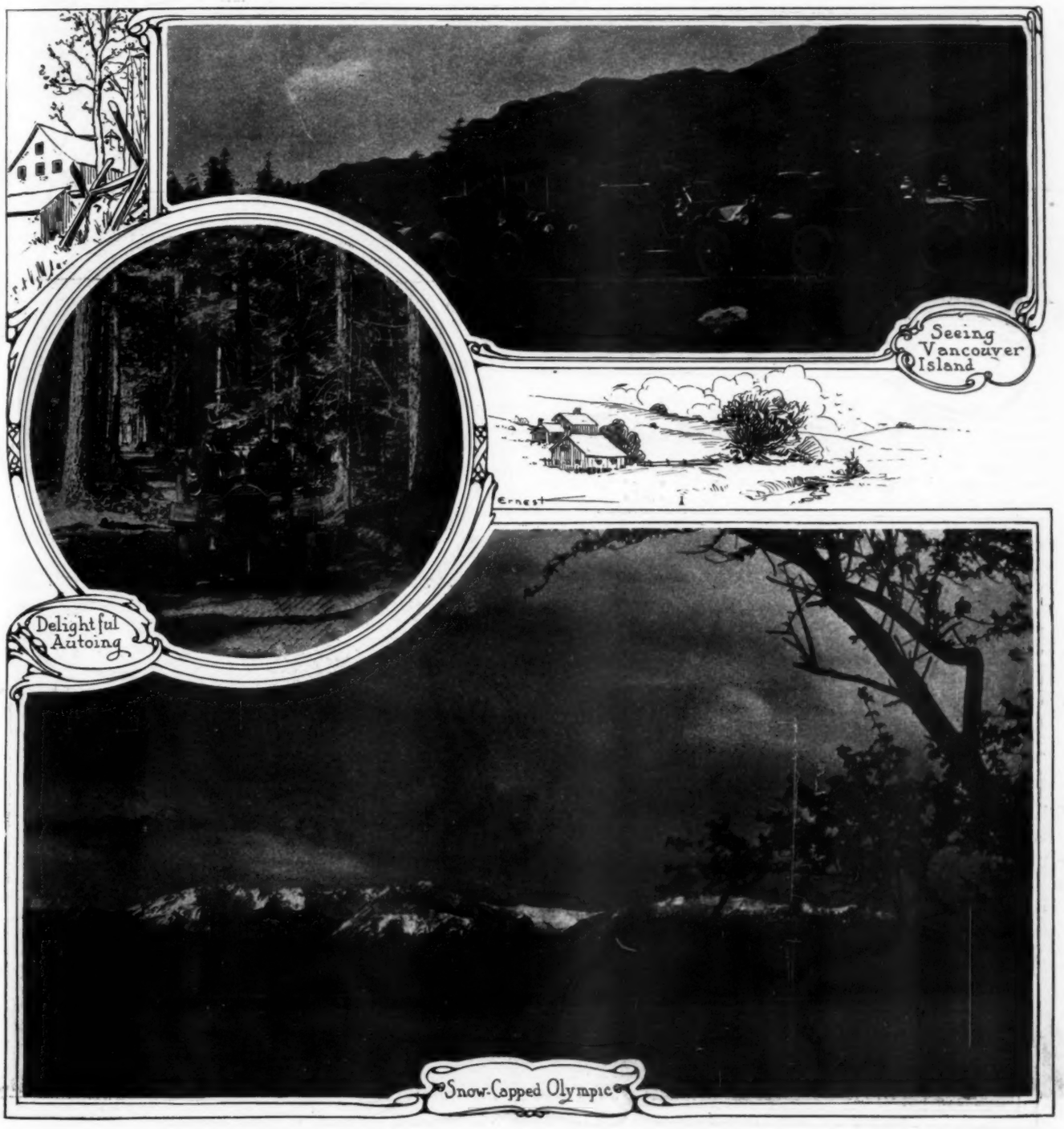
One of the particularly attractive features to automobiling in Vancouver Island is the serenity of the weather. From June 1 to October, the traveler can be almost assured of clear skies and sunshine, while at the same time the nights are cool and pleasant. All through these different districts, also, the traveler will come across the Indian reservations, containing the remainder of the tribes who once dominated the island, and the picturesqueness of their surroundings, and the interest of their condition, now almost semi-civilized, make up one of the unique features of a tour. To attempt to describe the scenic grandeur of Vancouver Island, would require the brush of a Doré, and the pen of a Shakespeare. No possible combination of modern talents, and even genius, can give it its dues. A constant change from seashore to forest, from mountain lake to rushing river, from sparkling streams to deepest depths of woodland silences, from stony wastes to flower crowned summits, all make a kaleidoscopic splendor, which must be seen to be even faintly appreciated. The shining colors of the cock pheasant may be seen strutting proudly through some of the lowland meadows, while the grey reticence of a grouse's wings occasionally flash through the road-side spaces in the timber recesses. Deer crash through the fir and cedar underbrush, while streams and lakes are alive with leaping trout.

The traveler coming from the United States can bring his own car across, provided it has been used by him in the States, without duty, and he will find himself most richly repaid by a trip around and through the island. The scenery of Vancouver Island, in its sublimity and endless surprises, cannot be equalled,

much less excelled, anywhere. It may be true that some particular points in Europe may hold more of historic interest, but for nature undefiled, in its sternest and in its most alluring moods, there is nothing comparable from a scenic standpoint to the wonders found here. The traveler-autoist will be able to purchase supplies and all necessary conveniences for a trip, whether long or short, in the various towns and districts of the island, and he will find good accommodations at very reasonable prices, wherever he chooses to travel. There are some portions of the island, of course, where it is absolutely impossible to penetrate with an automobile. Impossible, indeed, to penetrate save on foot, and there are portions of the island now, where neither the mocassined foot of the Indian, nor the hobnailed heel of the trapper or prospector, has ever been set.

It is this very wildness, this essence of the primitive, this pristine glory, which even yet halos those portions of the country accessible to an automobile, which constitute one of the chief charms of a trip through the island. Here may be seen deep fiords, through which the early voyagers sailed. Here still may be seen the carved prows of aboriginal canoes, cutting the water to the strokes of the Indian's paddle. Here the deer and bear roam, the wolf and panther couch and forage, and here the roar of wild fowl wings makes thunder in the Spring dawns and sunsets. This is indeed a land to be visited of all men, by those who can afford the time and expense of an auto trip. The roads, the weather, the accommodations, are all that could be desired. The scenery, something practically indescribable in its extent, variety, and beauty. It is the automobile enthusiasts' greatest opportunity; the threshold of the Pacific, the last and greatest West that has unfolded itself to the world.

With the number of people attracted to the Alaska-Yukon-Pacific exposition, abbreviated A-Y-P, at Seattle, and many of them



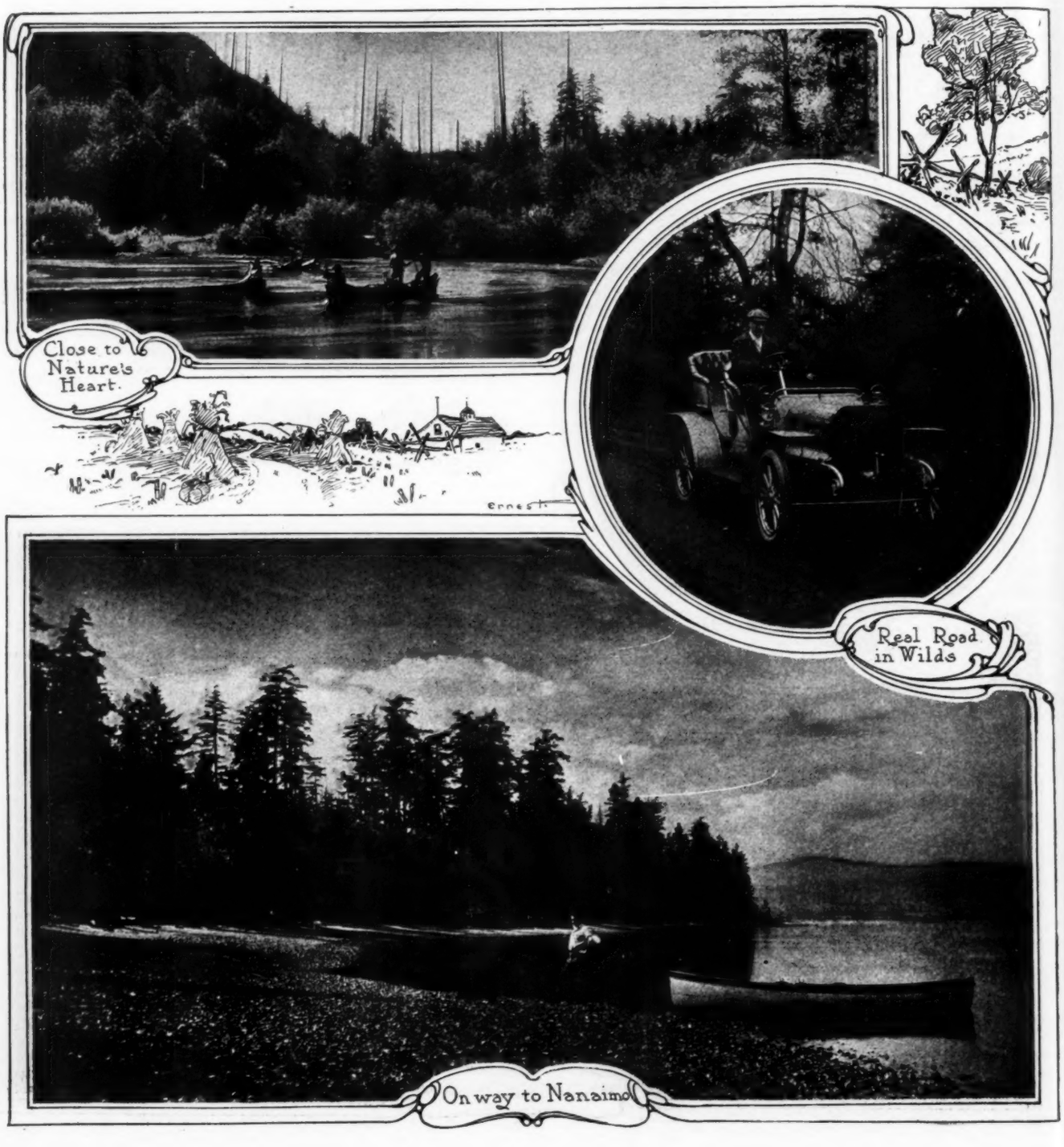
automobilists, who have taken their cars along, this description of the natural beauties and beautiful drives on Vancouver Island will come with peculiar appropriateness. To get to the Island from Seattle is not a very long ride on the boats, and even to one disliking the water trip, the 85-mile ride on Elliott Bay and Admiralty Inlet, with the views of the Northwest corner of our great and glorious country, is well worth while.

To make the trip, there is a sail of ten miles on the bay before the Inlet is reached, after which the remaining 75 miles is in a course due northwest to Victoria. This takes a person past Whidbey's, Smith's, and the San Juan Islands on the right or to the northeast, while of the other side, numerous peninsulas of equal natural grandeur are passed by. These latter include the little known Point No Point, Port Madison, Port Ludlow, and others, as well as the better known, Port Townsend.

This trip brings one to Victoria, from where Esquimault, previously mentioned as the terminus of a famous drive, and as the location of the Naval dry docks, is but a short ten miles. For those preferring the water, continuing on to the left, but with the direction changed to due west, brings one through the Straight of Juan De Fuca, ultimately to the ocean. Bearing instead to the right and still northwest, after skirting the San Juan group of islands, brings one through the Straight of Georgia to the same end, the blue waters of the Pacific.

AERO SCHOOL FOR YOUNG GERMANS

BERLIN, Sept. 10—Germany's first aeronautic school will come into existence October 1, at Friedrichshafen, the working place of Count Zeppelin. Eight pupils will be accepted for the first year, and must sign for a two-year course. All applicants must be under eighteen years of age.



ST. LOUIS SECURES 1910 GOOD ROADS CONVENTION

CLEVELAND, Sept. 24—Seven cities sought more or less assiduously the distinction of being the gathering place for the "Third Annual Good Roads Convention" to be conducted by the American Automobile Association and essentially aided by the National Grange, the American Roadmakers' Association, and the several organizations of automobile manufacturers.

St. Louis won out, and so in the fall of 1910 the good roads workers will participate in a highways fest which the Mound Cityites assert will establish a standard that will require considerable effort to surpass in future events of like character. An inning of talk by men of experience and some demonstrating of up-to-date methods of construction are considered to be just what are needed to show the Missourians how badly they are in the rearguard of commonwealths. Sam D. Capen, of the Automobile Club of St. Louis, had much to do with the selection of St. Louis, his material including an effective orator in Mr. Cannon, an invitation from the Business Men's League, a letter from Mayor Kriesmann, and a telegram from Governor Hadley. That this formidable array of material was effective is best shown in the final result, St. Louis winning out.

Forty-one States had representatives in the Cleveland convention, which, while less in numbers than the Buffalo gathering, expressed more forcibly the keynote of progress in roads construction. It so happened that Cuyahoga county had in process of building some 165 miles of pavement of a considerable variety, which meant that delegates had an opportunity of learning first-hand of their relative worth and cost. Vitrified brick predominates, even in the country districts, owing, undoubtedly, to the presence of material in plenty for brickmaking, in the immediate neighborhood, so as to be quickly available. This point carried weight.

In the report of the committee on resolutions were contained two timely matters, one referring to the need of greater caution in the use of the highways, and the other to the proper marking of all roads and post offices. The following is the resolution which referred to the use of the roads:

RESOLVED, That it is the unanimous sentiment of the representatives of the National Grange, the American Road Makers' Association and the American Automobile Association, in National Convention assembled, that the enormous increase of travel upon the public highways requires that drivers or operators of vehicles shall observe with added care the rights of all users of the roads; and automobilists particularly, because of the greater possible speed of motor cars, are requested to exercise extreme caution and kindly consideration in aiding the general public to become accustomed to this method of transportation. Furthermore, the many law-abiding automobilists are asked to aid in the enforcement of just regulations and assist in the apprehension of the comparatively few offenders who are deaf to persuasion and persistent in disregarding the rights of their fellow occupants of the roads.

The indifferent marking of the roads and the invariable failure to include the name of the town on its post office sign, brought forth the following:

RESOLVED, That this convention calls upon township, county and State officials, where empowered, to see that all roads are properly marked; and, furthermore, where such authority does not exist, to obtain same at the earliest possible moment, in order that this most important work may be carried out with uniformity. Incidental to this plan should come the placing of the name of each village, town or city on its Post Office, for modern travel now embraces a growing use of the public highways, and as a sequence the enlarging of attendant conveniences.

Assembled Group of Delegates to the Second Annual National Good Roads Convention at Cleveland

Secretary James T. Drought and the Wisconsin Delegation

Of course the convention tendered its unanimous thanks to the Cleveland Automobile Club for its aid in making the convention a success, and the plan of Delegate Johnson, of Oklahoma, furthering the good roads cause in that State, was given the stamp of approval. Again was the Currier good roads bill, now pending in Congress and backed by the National Grange, given unqualified endorsement.

In preparation for the 1910 convention, a committee was selected composed of the following or their successors as designated by the organizations which they represent:

Geo. C. Diehl, Buffalo, N. Y., Chairman A. A. A. Good Roads Board.

N. J. Bachelder, Concord, N. H., Master of the National Grange.

Logan Waller Page, Director United States Office of Public Roads, Washington, D. C.

James H. MacDonald, Hartford, Conn., President American Road Makers' Association.

S. D. Waldon, Detroit, Mich., President National Association of Automobile Manufacturers.

Coker F. Clarkson, New York, Association of Licensed Automobile Manufacturers.

Alfred Reeves, New York, General Manager American Motor Car Manufacturers' Association.

Chas. Thaddeus Terry, New York, Chairman Legislative Board, American Automobile Association.

Ralph W. Smith, President Colorado State Automobile Association.

Sam D. Capen, President Automobile Club of St. Louis.

Jas. T. Drought, Milwaukee, Secretary Wisconsin State Auto Association.

Louis R. Speare, Boston, Mass., President American Automobile Association.

Fred'k H. Elliott, New York, Secretary American Automobile Association.

The committee was given power to add to its own members, to the extent of five, the representatives of any other bodies which might be interested in the good roads movement.

The inclement weather of the concluding day made necessary an abandonment of the boat-ride on Lake Erie, and the theatrical entertainment in the evening wound up the convention, though many had been obliged to turn homeward on the afternoon trains. The next time it would appear the best plan to have the entertaining festivities more or less intermingled with the business session.

ROAD SITUATION IN U. S. COMPARED WITH FOREIGN COUNTRIES*

By LOGAN WALLER PAGE, Director U. S. Office of Public Roads.

THE present road situation in the United States may be briefly summed up as follows: In mileage, we have the most tremendous system of roads which any country has ever possessed since the world began. According to a careful road census, the length of all of our roads amounts to 2,155,000 miles. The most liberal estimate of our annual expenditure on these roads, both in money and labor, was a fraction over $79,000,000 in 1904, or about $1.05 per capita. At the same rate, this would be an expenditure of about $90,000,000 a year at the present time. England, with only 150,000 miles of road, spends about $80,000,000 a year, or about fourteen times as much per mile.

According to our road census, we have less than 40,000 miles of stone surfaced road, or about 2 per cent. of the total mileage; we have 108,000 miles of gravel roads or about 5 per cent. of the total mileage. Small as our annual expenditure for roads has been, it has aggregated, during the 30-year period from 1870 to 1900 a total of upwards of $1,800,000. We may, therefore, say that road building in the United States is, considering area, population, and wealth, at the same point at which it stood thirty years ago, and the seventeen hundred and odd million dollars have produced few appreciable results.

When we turn to the subject of road administration in the United States, we find that about half of the states are operating under practically the same road laws as prevailed in England when America was a colony. This system of road administration provides for the payment of road taxes partly in labor, and localizes the work to an extreme degree, by placing in authority the district or township road overseers, or road supervisors, no requirement being made to insure skill or knowledge of road building on the part of these petty officials. With few exceptions no system of accounting is in force so that an intelligent idea may be obtained as to the disposition of the road tax, and no definite lines of authority are established such as would guarantee the wise and equitable conduct of the work.

This is the system which prevailed in all the states until less than twenty years ago. It is, therefore, easily understood why, at the present time, the concrete results in the matter of road building are so few, are confined to a comparatively recent period, and are located in those States which have broken away from the inadequate and ineffective system which I have just described. It can also be understood why, at the present time, road work in those States which have clung to the old methods and the old system is conducted in a wasteful, intermittent and wholly ineffective manner, productive of no good results.

Road administration has either been placed on a sound and practical basis, or steps taken in that direction in about half of the States of the Union, comprising the New England States, New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, West Virginia, Ohio, Michigan, Illinois, Wisconsin, Minnesota, Missouri, Kansas, California and Washington. These States have adopted in principle or practice, or both, the system of centralizing under a State highway department the conduct of all or part of the road work of the State, thereby securing uniformity in methods, economy in administration, and skill in supervision. In some of the State highway departments the work is educational and investigative, with a view to ultimately giving these departments administrative powers. Some of the States, notably Kansas, Missouri and West Virginia, have provided for skilled supervision in the counties, through the appointment of county highway engineers. In most of these States appropriations have been made from the State treasuries, or the aid of the State convict force has been given toward carrying on road work throughout the various counties.

It is not possible in a short paper to enter into a discussion of the various systems of State aid in effect in this country. Suffice it to say that the principle of State aid and supervision constitutes the germ of the only road administration which has proven successful in other countries.

This movement is gaining headway at a very rapid rate, and when we consider that it has been little more than a decade and a half since its inception, the fact that half of the States have adopted it in principle and have actually expended from State treasuries considerably over $56,000,000, we may well feel encouraged for the future of road building in this country.

Effectiveness of French System

The striking feature of the French road system is the skilled supervision in every grade of road work and in every unit of the administrative organization. The basis of the system is the school of roads and bridges, one of the finest technical schools in the world, maintained at the expense of the national government. In this school are trained the highway engineers to whom are entrusted the building and maintenance of the roads of France. The course of study lasts three years and the instruction is free.

At the head of the administrative organization is an Inspector-General of bridges and highways, under whom are chief engineers

*Read at the Second Annual National Good Roads Convention, Cleveland, Sept. 23, 1909.

in charge of the road work of single departments and communes. Single arrondissements are under the direction of ordinary engineers and under engineers, the latter being equivalent in rank to non-commissioned officers in the army. The sub-divisions are under the direction of principal conductors and ordinary conductors. Next in line come the foremen of construction gangs, the clerks employed at headquarters, and finally the cantonniers or patrolmen, each having from four to seven kilometers of highway under his immediate supervision.

This great administrative machine working in complete harmony with definite lines of responsibility clearly established, accomplishes results with the precision and regularity of a great clock ticking off the seconds of time. Probably the most important unit in this great army of workers is the cantonnier or patrolman who has charge of a single section of the road. He keeps the ditches open, carefully fills holes and ruts with broken stone, removes dust and deposits of sand and earth after heavy rains, trims the trees and bushes, and when ordinary work is impossible he breaks stone and transports it to points where it is likely to be needed. He brings all matters requiring attention to the notice of his chief. Each cantonnier carries a little book in which the chief cantonnier notes his instructions and checks up the work accomplished. The conductors go over the line at regular intervals and direct the chief cantonniers, and all reports are transmitted to the central authorities, so that any day or any hour the exact condition of every foot of road throughout France may be ascertained. Every year the conductors prepare estimates of necessary expense for the next year, under three heads, namely, Maintenance, Heavy Repairs and New Work, and the parliamentary appropriations are based upon these careful calculations.

There are in France at the present time 23,656 miles of national routes which cost $303,975,000 to build. There are 316,898 miles of local highways built at a cost of $308,800,000, of which the State furnished $81,060,000 and the interested localities $227,740,000. The roads of France are classified into five classes: National routes, traversing the various departments and connecting important centers of population; department routes connecting the important centers of a single department and bisecting the national routes; highways of grand communication, little less important than the previous class; highways of public interest traversing a single canton and connecting remote villages and groups of houses with the more important roads.

How Work Is Done in England

There are at the present time 149,759 miles of road in England, on which the annual expenditure for the year 1905 to 1906 amounted to $78,059,000. It is, therefore, evident that the annual expenditure per mile of road amounts to about $520. In view of the fact that most of the principal roads of England have already been constructed, this large annual expenditure would appear to be devoted in a large measure to maintenance. It would seem that a system which required an annual outlay of $520 per mile for the entire mileage must be ineffective and costly. The explanation of this is found perhaps in the fact that in England the maintenance of the public highways devolves entirely on local authorities, these numbering about 1,900. Jurisdiction over the roads is vested in, first, the county boroughs; second, the county councils; third, the urban district councils; fourth, the rural district councils. The county boroughs are certain large towns which hold charters from the Crown entitling them to the privilege of self-government. In these the maintenance of the highways devolves entirely upon the borough or town council. In counties the maintenance of highways devolves upon urban councils in the urban districts and rural councils in the rural districts. The only exception to the control of the urban and rural district councils is in the case of main roads which are highways between great towns, and the maintenance of these roads devolves upon the county councils.

Revenues are provided by district taxes except for the main roads, for the maintenance of which the county levy is made. The national government aids in the maintenance of the highways by a contribution proportioned to the sum raised by the imperial taxation levied in the different areas.

As to skilled supervision, it may be said that no qualifications are required by law to be possessed by the men in charge of road building and maintenance, but it is the general practice in the important districts to appoint experienced highway engineers for this work. The English system lacks strong central control in each county, there being four different classes of government units, namely, the county boroughs, the urban districts, the rural districts and rural parishes. While the county council exercises some control over the rural districts and the rural parishes, they exercise none over the other two units.

Germany Has the State Plan

Germany is a federation of states, and it follows that road administration is conducted separately by each State of the Empire. The imperial government exercises very little control over the highways, and does not in any way contribute to the expense of their construction and maintenance. The kingdom of Saxony may be taken as a representative State of the German Empire. In Saxony the highways are divided into state roads, country roads and private ways. The state roads comprise those which have been built by the State and are maintained by the State. The county roads are generally termed "communicating roads," and are built and maintained at the expense of the parishes through whose territory they lead.

Richardson, New York; MacDonald, Connecticut; Bonifield, Ohio

A striking feature of the Saxon road system is the practice of planting fruit trees along the roads, the fruit yielding a considerable revenue. About $40,000 a year is obtained from the fruit grown along State roads, while the amount obtained from the country roads represents a much larger sum.

The State roads are cared for by a commission of engineers. The kingdom is divided into seventeen road districts, in each of which there is a road inspector. Under these inspectors are road masters, who are employed constantly throughout the year. Each road master has about thirty-seven miles of road under his direction and a road force of about fifteen men, each man caring for two and a half miles of road.

In the case of the minor roads the direct responsibility is borne by the authorities of the county. They levy the cost of maintenance and collect the revenues. The communities engage the road employees for the continued care of the highways. The technical supervision, however, is exercised by the road masters of the State force. Strict provisions are made requiring skill and special knowledge before road officials are appointed.

Switzerland Has a Local Supervision

The road system of Switzerland is local in character, the various cantons having jurisdiction over the roads within their respective borders. The roads are classified into State roads, built and maintained at the expense of the respective cantons; community roads, built and maintained by the communities, and side, or auxiliary roads, connecting main lines of State or community roads.

Each canton has at the head of its road system an engineer with capable assistants. In the canton of St. Gall, which may be taken as representative, there are under the control of the engineers five inspectors, or road masters, who are assigned to certain districts in the canton. The engineers and their assistants must have an academic education, and possess a diploma from the Polytechnic Institute, while the road masters are required to have a good technical education.

Summing Up the Various Plans

It is apparent from the foregoing that while the units of administration in European countries range all the way from the localism of England to the highly centralized system of France, through varying degrees, skilled supervision is provided by all of the systems, as well as an ample cash revenue sufficient to enable the engineers to carry out adequately their plans for improvement and maintenance. England is the most striking example of extreme localization, and it is a significant fact that England is also the most striking example of lack of uniformity in road work and of excessive expenditure in proportion to mileage. It is also significant that the most perfect road system, conceded to be such by all authorities on highway construction, is that France admittedly has the most highly centralized of all road systems. France, with a total mileage of about 2 1-3 times that of England, expends about the same amount annually for maintenance. Certainly the inference must be plain that centralizing makes for economy and efficiency in the administration of the public roads.

I desire to comment particularly upon what I consider to be the most important point which should engage the attention of American road builders and legislators at the present time, and that is road maintenance. In the years that have past by far the largest portion of our annual expenditures has been for maintenance of our unimproved roads; a maintenance which may justly be considered a mockery, for it has been a maintenance of the roads in almost their primitive condition. Now that we are actually building roads which compare with the best in Europe, it is of the greatest importance that we make provision for safeguarding and maintaining these roads built at so great an expense.

In a careful study of the highway laws which have been enacted within the past fifteen years, I find almost no provision for the maintenance of the roads, although large sums are authorized for construction. The erroneous impression generally prevails that when a so-called permanent road is constructed it is there for all time, and the expense has practically all been met. I have investigated the cost of maintaining roads in the leading European countries, and the figures may almost be said to be a revelation. In 1901 England and Wales maintained 26,589 miles of main roads at a cost of $370.34 per mile. In 1907 England and Wales maintained 27,566 miles of main roads at a cost of $446.74 per mile, or, in six years, the cost of maintenance has increased $76.10 per mile—an increase of over 20 per cent. In France the increase in cost of maintenance of the national roads has been about 5 per cent in the same period. The cost of maintaining main and suburban roads in England and Wales in 1905 and 1906 was $440.47 per mile. In France the cost of maintaining all roads during 1904 was $243.33 per mile. While these last figures are not strictly comparable, one being for 1904 and the other for 1905, yet the mere fact of one year's difference in time fails to explain the difference of $197.14 per mile in cost of maintenance—the natural inference being in favor of superiority of the France system.

In Germany in 1906 the average cost of road maintenance was $214.13 per mile. In Belgium the annual cost of maintaining the provincial roads is $277 per mile.

These figures express most forcibly two facts: First, that even the best of improved highways are not self-sustaining; second, that the cost of maintenance varies tremendously with the degree of centralization of the administrative organization which has the roads in charge. France with its most highly centralized organization is maintaining her roads at about 54 per cent of what it costs England and Wales with a very local and loosely centralized organization. Furthermore, the alarming increase in the cost of maintenance has been far more rapid in the countries with local and poorly organized systems of highway administration. We have just seen that while the rate of increase in maintenance from 1901 to 1907 in England and Wales was over 20 per cent, it was only about 5 per cent during the corresponding period in France. In England the maintenance is often intermittent and varies; in France the maintenance is continuous and highly specialized.

Many of our States have spent and are spending large sums of money on their highways with but little thought or provision for maintenance. This, if the experience of European countries is of any value, must prove disastrous in two ways: First, granting that the roads constructed at so great cost will not be allowed to go entirely to ruin, the cost of maintenance will be higher the more local and loosely centralized the organization for maintenance; and second, systems of intermittent maintenance are sure to increase in cost from year to year as they have in Europe. It is high time that our legislatures take note of these facts and provide ways and means so that our roads once constructed can be maintained efficiently and economically and not allowed to go to ruin, and that exorbitant sums need not be expended on fruitless efforts to maintain them unsystematically and in an unscientific manner.

It must also be evident from a study of expenditures in Europe that our road revenues are entirely inadequate. While $80,000,000 seems a large sum, it is only about $38 per mile to meet all new construction, bridge building and every class of maintenance.

We need, and must have, more money for roads, definite provision for maintenance, a system of continuous repair and a centralized, skilled supervision.

INFLUENCE OF AUTO ON "BACK TO THE FARM MOVEMENT"

By HAYDON EAMES, General Manager Studebaker Automobile Company.

J. J. HILL'S address before the meeting of the Bankers' Association of Chicago, is most refreshing, and gives the ordinary business man considerably more confidence in the mental grasp of those who control our financial affairs.

There is one point, however, in regard to which Mr. Hill seems to be misinformed: the favorable influence of the automobile upon the very conditions which he would like to bring about—increase of agricultural as compared with urban population.

It looks as though the vast affairs with which he is concerned have compelled him to view the farmer collectively rather than individually, and he seems to be correspondingly unfamiliar with the change the last six or seven years, and the advent of the automobile, has made in the details of the farmer's life. Nor does he seem to recognize the large part which the automobile has, and can be made to play in justifying the extension of his own railroads and in the preliminary work of opening up new territory with that ultimate object in view.

We wonder if he recognizes the extent to which the individual farmer is beginning to specialize in the apparatus which he employs on his farm. No small number of agricultural implements now used by the farmer have their functions so combined with those of other implements which have heretofore been of general application, as to supersede the latter, and, consequently, materially specialize the type of apparatus and vehicles which he uses for other purposes. The advent of the automobile, while not directly responsible for it, has tended to facilitate this process.

At one time there were a dozen uses for a certain kind of wagon which might be described to-day as an unspecialized type. To-day a number of agricultural implements accomplish in themselves a part of the services which were heretofore accomplished by such wagons; and, with one exception, the remainder of the services performed by that wagon is now found to be better performed by a more specialized type; that exception is the transportation of the farmer and his people from one point to another. The new specialized type is not convenient for this purpose, and the farmer resorts to the automobile. He goes to town every day perhaps, and spends very little time in doing so, instead of every week at the expense of an entire day and service of "a team."

The automobile makes the quarter-section farmers near neighbors and develops a sense of community in agricultural districts which was utterly impossible with the former methods of transportation. It makes the farmer's life and surroundings much more liberal, and, under many conditions, far more attractive even to the young people than the life of the city.

As an example of the part the automobile is playing, and can be made to play, in the affairs with which he is concerned, it may be interesting for Mr. Hill to know that at the time the Belgian steel operators were migrating to the Baltic provinces of Russia in great numbers, the resulting reduction in the population of some parts of Belgium was such that underwriters of certain extensions of the Belgian railways seriously considered availing themselves of the use of the automobile to protect themselves against what would have been a decidedly unprofitable execution of that part of their obligations which called for the extension of the railway in the partially deserted districts.

The broad principle underlying this is, of course, equally applicable to any sparsely populated territory, irrespective of the cause of that sparseness. We venture the opinion that if the dissection of the census of 1920 is such as to reveal it, it will be found that the migration during the preceding decade will have been from the city to the country, at least in a large part of the United States. We are not so sure that the census of 1910 might not already reveal a tendency of this kind, provided the concentration of immigration in cities does not entirely obscure the question.

Mr. Hill should recognize the automobile not as a disadvantage to the agriculturist, but as one of the most potent factors cooperating with his own splendid efforts and accomplishments toward agricultural development.

In spite of this somewhat minor criticism, we cannot but feel that it will be a good thing if Mr. Hill's address were published in pamphlet form as a text-book in the schools.

Iowa's Gumbo Was Found Deep and Sticky

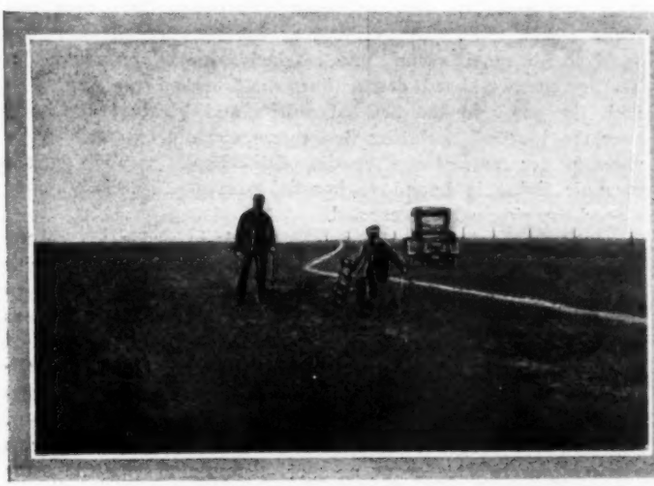
Many Impromptu Receptions Held En Route

BAY STATERS IN A DOUBLE TRANSCONTINENTAL TOUR

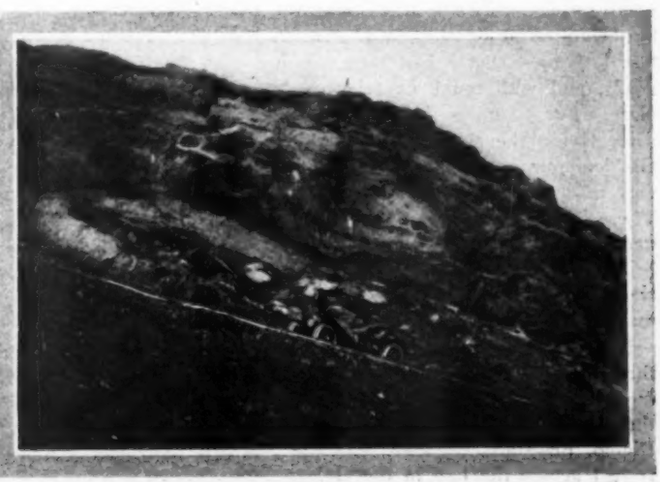
SEATTLE, WASH., Sept. 20—From Lowell, Massachusetts, to Seattle, Oregon, is a far cry by train, but it is still farther by automobile, and especially so if the route selected wanders over most of the boundless West before reaching its destination. It is not always the volition of the tourist which impels a roundabout course, but more often because of the absence of roads and of bridges, with a result that can be imagined only in part. Over 5,100 miles of all kinds of country can be traversed in journeying from the Bay State to the shores of Puget Sound when the itinerary includes a run of 3,700 across these wide United States, and another important item of 1,400 miles from Los Angeles to the North. This is the westbound outline of a transcontinental tour recently completed at this point by Ira H. Morse, Mrs. Morse, and a mechanic, Omer Deschenaux, all of Lowell, Mass., in a Pope-Hartford runabout, with full traveling equipment.

For two and a half months they and their car were constant companions in making this long run from ocean to ocean, and nearly all of that time was spent upon the roads, for the intention at the start was to make the trip for pleasure entirely, and not for a record. Since the eighteenth of May they have been experiencing every conceivable kind of roads, some of them not worthy of the name, interspersed now and then by some fine highway traveling. No one who has ever made a long tour can fail to appreciate the difficulties which they encountered, but those were all expected, and were far overbalanced by the pleasures, the interesting points seen, and the jolly good time "in communion with nature in her visible forms." For instance, can there be anything more pleasing to the average person than to camp out, with a good tent, a flowing stream from which fresh fish can easily be obtained, and perhaps not another person within a score of miles to break in upon the scene?

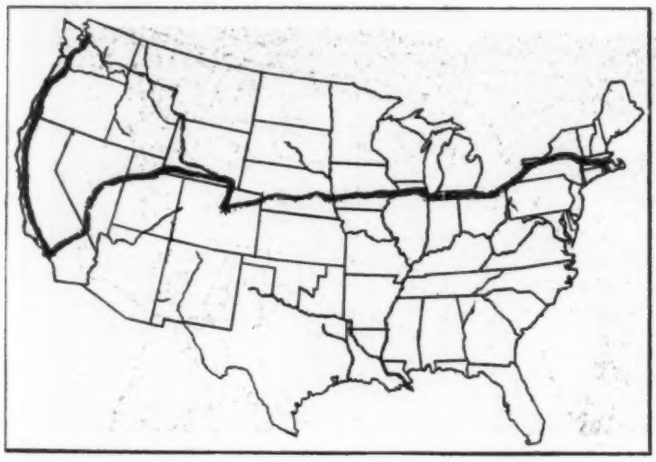
Early in the spring Mr. and Mrs. Morse decided that they would like to try desert driving and real mountain climbing in a tour to the Pacific Coast, and forthwith made their plans. Both had been over the ground in trains, and knew somewhat of the conditions which would confront them, and even went so far as to plan a return trip, thereby going better than the average transcontinentalists—those who ship their cars back home. The affair was purely a private venture, and not in the slightest manner connected with factory or agency. The car is a regular stock Model M runabout, with a four-cylinder motor of 35 horsepower. The rear was arranged to carry baggage, the tent, supplies of food and fuel, and so for the chauffeur a small seat was placed on the left running board—really the most comfortable place to ride on any car. A complete camping outfit was obtained, with blankets, cooking utensils, and boxed supplies; and for use, if needed, were added firearms, fishing tackle, block and tackle, heavy hickory sticks for prying, and a spade. The machine had previously been driven on long trips into the wildest portions of Maine and Canada, and in all had traveled over fully 18,000 miles of all kinds of roads. All the members of the trio are skilful drivers.



Bridge-Building on the Prairies of Colorado



Wyoming Roads Were Often Steep and Rough



Transcontinental Route of I. H. Morse and Party

Thus prepared for one of the longest continuous automobile trips ever made, the party left the City Hall garage, in Lowell, on the morning of May 18, and immediately headed west. The route chosen was the usual one, crossing to the valley of the Hudson, and passing through Albany, Syracuse, Buffalo, and Cleveland, reaching Chicago on May 27. In nine days the car covered 1105 miles, despite the fact that heavy downpours necessitated a longer stop than usual at Valparaiso, Ind. Three days later they were in Marshalltown, Ia., when Mr. Morse wrote in his log book, "Since Chicago the traveling has been very slow. The hard showers at night have made these black gumbo swamps, for which Iowa is notorious, hub deep, and the mud sticks to the car like glue, probably 200 pounds not being an exaggerated estimate of the amount collected. The car is acting to perfection, not a skip in the motor, and with power enough to plow through black mud for 100 miles yesterday. We were in some bad washouts, too, and in one case there was a long steep hill which had been washed for its entire length. The sand was about three feet deep, it seemed, and ours was the first vehicle of any kind to go over it since the rains." Iowa was crossed by June 2, for on that day Mr. Morse and his compaions reached Council Bluffs, and the uppermost thought in his mind is well shown by the following expression: "If one wants to find out what the car is made of, it is only necessary to come out here and buck these gumbo swamps when it is raining. Our car is a great one. People here say that we have 500 miles of fine roads to Denver, and we hope to make it in three days. We will try the route via Kearney."

Could Not Take Glidden Tour Route

This, however, proved to be by far too sanguine a view of what was in store for them, and the tale is impressively told by the following extract, dated Denver, June 14: "When I wrote last I thought that I had been running over some pretty hard roads, and with tough experiences, but they have been beaten since. For 70 miles the bridges have been washed away, and after trying the short southern route to Denver—the way the Glidden tour expects to come—we had to give it up, retracting part of our course to reach that of the longer northern trails. These led, via Cheyenne, 120 miles longer than we had counted upon. One day there were seven streams to ford where the bridges had been washed away. In two cases where the water was four feet deep, old floating bridge timbers were used to make a new bridge on which to cross."

From Denver it had been the plan to take a southerly course, through Colorado Springs, Pueblo, Trinidad and Raton, entering New Mexico, and visiting Las Vegas, Albuquerque, and thence turning westward through Arizona, touching at Canon Diablo, Flagstaff, Williams, and the Needles. The last named is just across the line in the Golden State. Then there would be the Great Desert confronting the tourists, and Mr. Morse was rather dubious about crossing it, but he hoped to get through and then to Daggett, San Bernardino, and Los Angeles. But planning on paper is far different from the realization of those on the road. South from Denver the route was well-nigh impassable on account of rains, and there was absolutely no use attempting the trip. It was necessary to return to the mile-high city, and then go north to Fort Collins, Col. The middle route over the mountains was taken through Laramie and Evanston, Mont., and through some wonderfully beautiful scenery. Salt Lake City, Utah, and the towns of Ely, Tonopah, Goldfield, and Bull Frog, in Nevada, were those on this route, but the difficulties in reaching them are little suggested by that simple line-up of peculiar nomenclature. Los Angeles was reached on July 1, and a delegation of the automobile club met the real tourists at the outskirts of the city. The newspapers were much interested in the party, both as they approached the city and on their arrival, so that quite a hearty reception was accorded them and their Pope-Hartford. The odometer then registered 3,700 miles, but the strenuous grind had had no evident effect upon the machine, and it was simply filled with gasoline and oil in preparation for the run up the coast.

Quicksand Will Readily Engulf an Auto

More quotations from Mr. Morse give descriptions of the run from Denver to the Pacific. He writes: "We have had experiences varying from an exciting brush with prairie wolves to digging the car out of quicksand. The lack of bridges is the serious drawback to the use of the auto in the West, for beyond Colorado there is no pretense of constructing them. It is a case of ford. If the car becomes enmired the walk for horses may be a good many miles. Once when we had pulled ourselves out of two streams within a ten-mile run, we were informed that there were a dozen more in the next 30, so it was impossible to make more than about 40 miles a day. Last night we were caught in the quicksands and the car went in up to the body. The more we tried to dig the deeper it sank, so I walked 17 miles to town, secured four mules and went back. The car was so deep that the mules could hardly get it loose, but by prying up a wheel we were able to get it started. We were rather surprised and very much gratified to find that, in spite of the great heat and extra amount of work, that our engine did not get hot, and only once did we add to the radiator supply from our tank during the day. In Nevada we saw many cars, and there was really a nest of Pope-Hartfords there, all doing good work. I never saw so many Pope cars among so few people as at Ely, Tonopah, and Goldfield."

Several days were spent in visiting around Los Angeles, and then began the ride to the North, along the coast, toward San Francisco and Seattle, a jaunt of 1400 miles. Frisco was reached on July 20, having found fair roads for 200 miles, and then excellent for 300, in the run from Los Angeles. Another start was made on July 23 toward Portland, Ore., over bad rocky roads, with some very steep ascents, but the car was equal to all requirements, and reached Portland on August 1. Seattle, the westward destination, was reached on August 4, with the party in the best of spirits and highly enthusiastic over the journey, declaring that those who ride in trains miss about 75 per cent. of the beauties of the land. In addition, the open-air living is bound to benefit everyone, especially when a good camping outfit is carried.

A short stay in this city was planned, in order to see the Alaska-Yukon-Pacific Exposition, and to take some side trips to points of general interest, and then the return journey to the Atlantic began. A different route as far as Cheyenne was considered for the return, going directly eastward instead of toward the south. Spokane, Wash., Livingston, Mont., and the northwestern part of Wyoming formed the important directions on the outline. Montpelier, Ida, Granger, Rock Springs, Rawlins, and Cheyenne were on the map in that direction, with a run down to Denver as another. From that city the same route used in coming out was considered best for the return.

DETACHABLE WIRE WHEELS MUST PROVE WORTH

By Rolland C. Laurie

NOW that interest is being aroused in the detachable wire wheel following various excellent articles on the question, it perhaps would be of interest to learn how the general public regards the detachable wire wheel from a practical buying point of view. The writer is connected as sales manager with a company manufacturing light automobiles, embodying in its design a detachable wire wheel, giving an option on a detachable artillery wheel. This wheel is built upon somewhat similar lines to the Rudge-Whitworth, with the attaching, of course, free from anything complicated in design because of the low price of the car.

The company experimented extensively with this wire wheel, had no cause for complaint and no breakages to report, and it was adopted only after serious consideration of the merits of a wheel of this type.

Wire Wheels Proved Worth at the Mont Ventoux Climb

Now we come to the particular point: the placing of this before the public; and it is interesting to hear the various opinions of private purchasers and agents. The public generally seems to regard the wire wheel with distrust. First, a great many jump at the conclusion that the wire wheel lacks lateral strength, as Mr. Mackle pointed out in his article. This point has been disproved time after time in actual practice, and we can believe that a conservative nation like the British do not take up a design such as this unless really tangible advantages are clearly shown.

In a personal letter to the writer from S. F. Edge, the well-known British motorist, Mr. Edge says: "I have been using these wire wheels for over five years and nothing would induce me to return to the old artillery pattern." Such testimony coming from an authority is invaluable, but the extraordinary point is, taking the general public and averaging the majority of opinions, after they have been persuaded into thoroughly believing the truth of the superiority of the wire wheel, they come back to the appearance question and say that they do not like the looks of it. This is a point which I should like to emphasize. Throughout this year a great many callers have expressed the same opinion, and yet, when on a visit to England, I noticed that the wire wheel hardly struck one as being anything out of the common in design, so prevalent was the usage of it. Indeed, for appearance, taking the same car first with artillery and then with wire wheels, there is not the slightest doubt that once the eye has become accustomed to the appearance, the general aspect of the wire wheel is far more pleasing.

Daily, agents call upon the writer and say that they have full belief in the advantages which are claimed for the wire wheel, but that they fear to exploit a machine so fitted before the public because of the heavy "missionary work" involved. The public is slow, as a general rule, to grasp the significance of any step in the right direction in design, even if it does not bear upon the mere question of appearance. It took years for the magneto to be recognized as an improvement, but, in the end, the magneto won out, and is now universal.

When we have a great many leading foreign cars fitted with wire wheels, and proving the advantages thereof, there is no reason why wire wheels should be looked upon with suspicion. As for a detachable wheel, the advantages speak for themselves. The only criticism is, that instead of the usual British practice of carrying the same in a slot in the running board quite exposed to public view, it would be preferable to have some kind of a case designed to contain the whole wheel, as this would look somewhat neater. Obviously some kind of a looking pawl, such as a Rudge-Whitworth, is the best form of attachment for such a wheel, but this is somewhat costly to manufacture, and can only be included in the higher priced car. The attachment for the detachable wire wheel which has been on the market for nearly a year, and to which I indirectly refer from a practical standpoint, is merely effected by a central pinned bolt which passes through a drilled hole in the hub shell.

From a selling standpoint, until the public become educated to the wire wheel through the medium of advertisement, the road for the pioneer in this respect will be a stony one. Having had experience in the matter, I can speak from a practical standpoint. It is extraordinary to note the attitude of a buyer when he views this wheel. I have had the wire wheel termed a "bicycle wheel" by a would-be buyer, and the only recourse of my company was to place on the road demonstrating cars fitted with the alternative, artillery wheels; and, generally speaking, the public vote for this wheel every time, in spite of the fact that even *they* are willing to admit the superiority of the wire wheel from a point of view of correct design.

Generally a private buyer fears to be driving a car fitted with anything out of the ordinary in design which may stamp it as "cheap," and this can be easily accounted for from the fact that some of the earlier forms of light automobiles were fitted with inefficient and badly designed wire wheels which gave trouble and earned a bad reputation. Of course, I am only speaking from an experience of this wheel in conjunction with a light runabout. It is yet to be experimented with by any well-known manufacturer, as this might make some difference if applied to heavy touring cars, for here one reaches a different class of buyers, the greater number of whom have probably seen this wheel abroad and therefore already know its merits.

But for the manufacturer of light automobiles of the runabout type I may say from experience that the work of introducing such an improvement is uphill in the extreme, because of the lack of cosmopolitan element among purchasers of this type of car. The majority with whom I have come in contact have never even heard of the success of the wire wheel in England. All they have to judge from are the examples of the old type of wire wheel, which undoubtedly was imperfect in design and again was not the detachable variety. Certainly the public appreciate quick detachable wheels, and the advantages thereof; that I have found from experience; but until this matter has been experimented with by a manufacturer of touring cars, the maker of runabouts has no chance, because of public prejudice.

Cannot Pawn Automobiles—The French Government pawnshops have declined to make any further advances on automobiles, for it has discovered a peculiar action of certain owners. Parisians who pass two or three months of the year at places where automobiles have little use have found that to pawn them is a cheap way of having them well cared for during the summer.

STANDARDIZATION GATHERS FORCE IN BODY WORK

ADVANTAGE is realized at no inconvenience when account is taken of general practice in body work as well as in mechanical designing. There may be no apparent direct gain in following in the path blazoned by a previous worker in the same vineyard, but experience is always a cashable asset, and things done are natural models to go by.

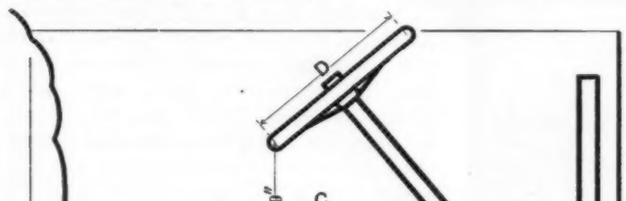


Fig. 1—Diagram showing seat and steering post dimensions

Take the driver's seat, for illustration. Why should a motorist have to get used to a different set of dimensions when he climbs out of one car into another? Referring to Fig. 1, it will be observed that the distance from the back of the "dash" to the front of the seat is 24 inches; this dimension obtains to a great extent in various cars, and if it is a sufficient distance, why should not motorists have the benefit of this measurement in all makes of cars? If it is not enough, why should body makers use this dimension? In the same figure the slant of the foot-board is that due to an elevation of eight inches, and ten inches back. If this is a convenient slant, why not standardize it? If it is not a good slant, why use it?

If the seat is 18 inches from the deck, when the distance back from the dash is 24 inches, is it not self-evident that the seat should be moved back to the radius R, on the arc A C, cutting the point B when the seat is less than 18 inches up from the deck? If the distance from the rim of the steering wheel at its low point is nine inches as a rule, would there be any objection to having this dimension fixed, so that autoists would become accustomed to the position and feel "at home" in every car at a moment's notice?

Granting that there are good reasons why all cars should not have the same length of wheelbase, even so, this does not make it necessary to employ hybrid lengths of bodies; surely a body can be some one of a regular set of lengths. Fig 2 shows the prevailing lengths expressed in metric measurements for even values, with English equivalents. The differences are represented by about five-inch increments and it would be a positive advantage to a buyer of a car were he in a position to purchase a new body in a year or so, when the style changes, as it frequently does, thus bringing his old car up to date in point of appearance at any rate, and with standard dimensions it would be possible to explore the open market, procuring a body from stock, quickly, and at a reasonably low figure.

Fig. 3—Suggested standardization of clearance for frames

That the clearance should be minimized is one of the fixed principles of designing on the count that the lower the center of gravity the better will be the behavior of the car. Certainly the center of gravity will not be lowered by perching the body high in the air; the distance C, then, remains to be fixed on a basis such as will afford an adequate clearance, and no more. Under the circumstances it would appear to be the height of good sense to standardize the clearance, taking into account a reasonable vertical bounce of the body, when, if the springs are not up to a suitable standard, the idea depicted in Fig. 3 represents the cure.

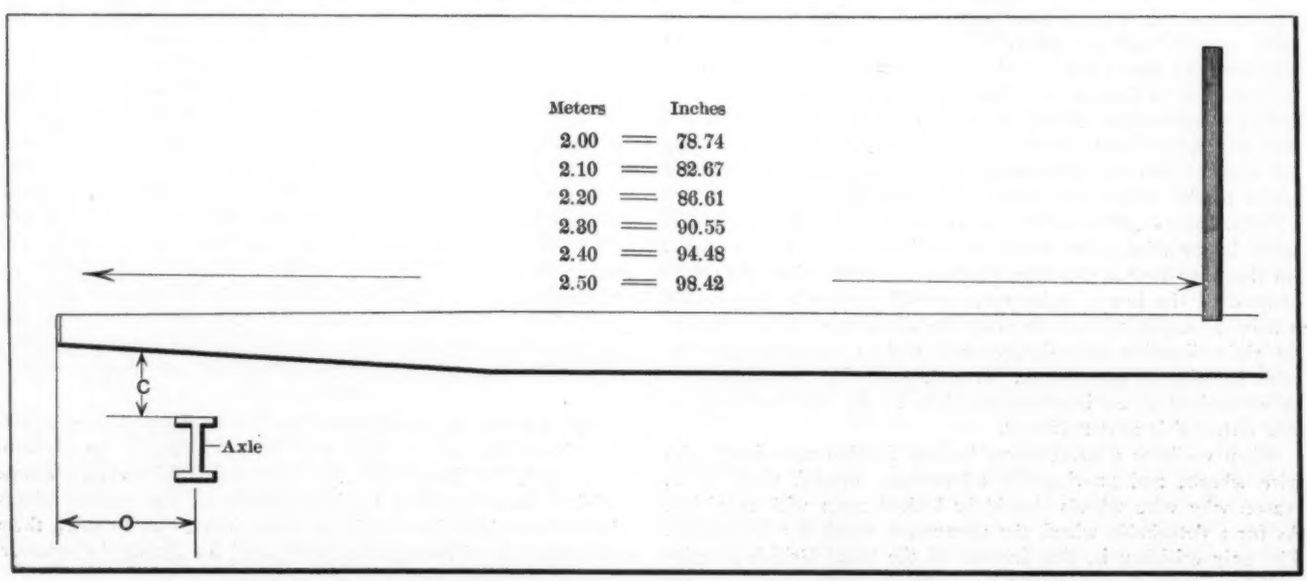


Fig. 2—Showing prevailing lengths of frames expressed in metric measurements for even values

SOME OBSERVATIONS ON THE STEERING GEAR

By THOS. J. FAY.

OWNERS of cars naturally consider that the steering gear is of even greater importance than the motor, for if the motor fails to work, it will have to be fixed before the car will be capable of rendering service, but if the steering gear fails while the car is in motion, the speed may be high enough to engender serious consequence.

It is not necessarily true that there are more accidents, due to defective steering gear, than was formerly the case, although there are more inexperienced autoists simply because there are more cars in use. Defects in steering equipment, from original causes, are probably on the decline, so much so, in fact, that the large increase in the number of cars in use has not led to a vast number of accidents directly traceable to defective gear. Still, the problem is a serious one, and the remedy lies in the use of well-made linkages, levers, and a steering wheel of undoubted competence.

Even if the equipment is of the very best possible to devise, it is likely to go awry in the hands of a man who fails to appreciate the enormity of the task involved in holding a car to the straight and narrow path, when the path is rough, and the speed of the car is high, with many turns around which the car is allowed to spin. If autoists will attend to the main question, which is a matter of keeping steering gear in good working order, and drive with prudence, especially when the road is rough and the turns are many, the number of accidents due to defective steering gear will sink so low that the "news value" of the automobile will fall below a noticeable standard. In the meantime, the preference, when cars are being purchased, will go to the class in which steering gear is given a fair measure of designing attention.

Certain Points of Design Uppermost—Of the points which should command the attention of users of cars, lost motion in the steering gear is of the first importance. It may be due to a bolt, or a nut, adrift, which will cause trouble of a serious nature. If there is more lost motion than would seem to be desirable, it may be that the worm and sector, if the gear is of that type, is not held in the proper relation. Fig. 1 depicts a

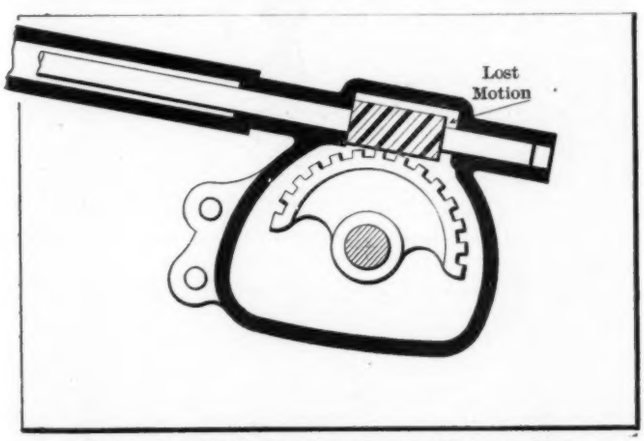


Fig. 1—Possibility of lost motion should be avoided

worm and sector type of steering gear, in a diagrammatic way, intended to show just where the lost motion, if such there is, will be of the greatest detriment. When the wheel is turned, if there is a little end play (far less than the figure indicates), the wheel-shaft will respond, but the sector will fail to do so. Until all the end-play is taken up, the sector will fail to rotate, and as strains come on, from the road wheel, the sector will then rotate, causing the shaft of the steering wheel to reciprocate, and the road wheels to wobble from side to side, in an alarming manner. To overcome this trouble, it is necessary to replace the thrust washer, if one there may be, and if necessary, introduce a washer, made of phosphor bronze, of suitable thickness to take up all the end shake of the steering wheel shaft.

Some lost motion will follow if the worm is not set on the pitch line, in its proper relation to the sector; this will be true if the bushings are worn, and when a new thrust washer is made and fitted into place, if the lost motion is still in greater presence than is desired, the only thing remaining is to replace the bear-

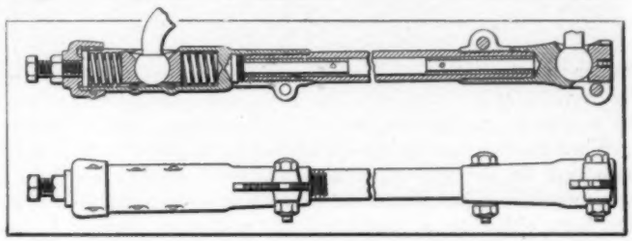


Fig. 2—Drag rod construction which shows merit

ing brasses. When the gear is dissembled, it will be possible to dimension the same and determine by measurement if there is any great amount of journal wear, thus rendering the task less troublesome, since the brasses may be replaced without waiting to determine the remaining lost motion through actual trial.

As a rule, it will be found that the lost motion is due to end shake, just as the illustration shows, and not to worn-out journal brasses on which the wear is far less than it is in thrust. If the gear is irreversible, or nearly so, as it is in many automobiles, a little lost motion is to be expected owing to the smallness of the angle of the worm, which can only be irreversible if the angle is such that a little lost motion will be present and unavoidable.

Drag and Cross-Rod Should Be Well Designed—Fig. 2 illustrates a type of drag-rod, which is of the greatest value in actual service, due, in a measure, to the use of a buffer spring, so placed that shock cannot be imparted to the materials of which the parts are made, not only in the rod, but in the rest of the steering equipment as well. Besides aborting shock, the design is such that great reliance may be placed on the parts, due to the use of good material, and the methods of design which assure permanence. The socket forgings are of a fine grade of steel, drop-forged and heat treated to render them hard over the bearing surfaces, and dynamic, which is the property that assures long life under conditions of shock loading.

The socket forgings are accurately machined, threaded to match threads cut on the tubing, and when they are screwed on, proper means are provided to lock the forgings, so that to screw them off, it is necessary to unlock them; under these conditions, for the parts to come off while the car is in motion, is quite out of the question.

Brazing Works When It Is Well Done—Many workmen labor under the impression that a brazing job cannot be done unless the parts are a loose fit, in order, as they say, to allow the brazing material to enter and form a bond. The result is, when they do the work, the parts are a very loose fit, with accentuated shearing tendencies in the section of the brazing material, and if the brazing happens to be poorly done, the result is anything but good, since, in the absence of brazing, there is not even a good mechanical bond.

A good mechanical bond is possible to procure without, in any way, interfering with the brazing process, since the parts, if they are well fluxed, will take a coat of brazing material, even when the recess is but a thousandth or two. In brazing, if the work is to be up to a sufficient standard to use in steering gear, it is necessary to clean and brighten the surfaces in a most thorough manner. This will best follow by mechanical scraping

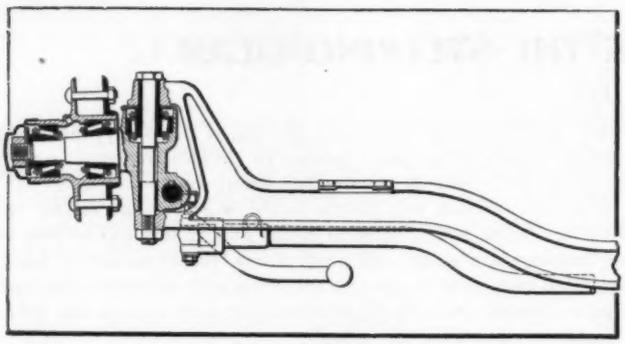


Fig. 3—Large pivot bolts make for long life

rather than by dipping in some corroding material. Dipping may be of value as a preliminary, but a file, and scraper, in the hands of a man of competence, will go a long ways toward success.

When the parts are well brightened and the grease is thoroughly removed, by the use of soda water, benzine, or equally good solvents, it remains to flux the parts with borax, and then apply the heat, either by a forge or from a Bunsen burner; if fire brick, or clay, is used to build up around the parts, the heating process will be attended with less difficulty, and the work will be in better fettle at the finish. A rather hard brazing material may be used; this may be purchased ready for use, and there is no reason at all why a motorist of but slight skill can not make a good job of brazing.

Steering Knuckles Should Be Carefully Examined—Even if the class of work found in a car, when it is purchased, is up to the very highest standard, it is the height of good judgment, on the part of every motorist, to examine the gear and the knuckle details, at regular intervals. Fig. 3 depicts a regular make of steering knuckle, in which the design features are up to a fitting standard, and all that the user can be expected to do is to keep the parts free from dirt, lubricate with regularity, and on occasions, ascertain if lost motion is creeping in. As will be observed, a pivot bolt, of excellent proportions, passes through the forging; is provided with a head to prevent it from dropping down, and a castellated nut, on the under side, holds the pin.

This knuckle pivot bolt, while it serves to center the Timken roller bearing, as shown in Fig. 3, also serves to hold the plain bearing, at the bottom, and being of a fine grade of steel, it is of the greatest advantage from the point of view of strength and safety in service. Looking at Fig. 4, it is to note a knuckle, made of steel casting, in which a knuckle bolt is not used, and if the knuckle fractures, as it may in service, the absence of a through bolt is attended by dire results. Of course, there is a great difference between the use of die-forged knuckles, of selected grades of steel, which marks the construction of the steering knuckle as depicted in Fig. 3, in contrast with the steel casting product as shown in Fig. 4. Absolute safety would dictate the use of the finer material, which is no license to do without a knuckle pivot bolt of competence and bearings such as will take thrust in addition to radial pressure.

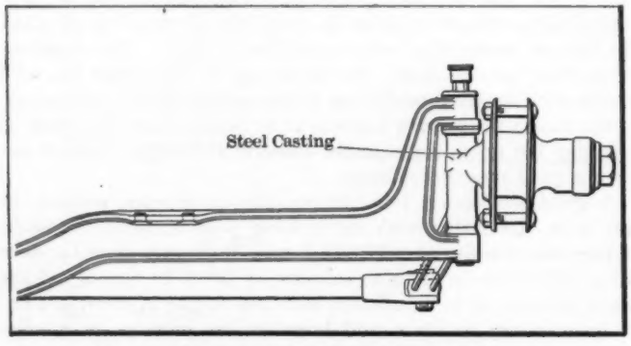


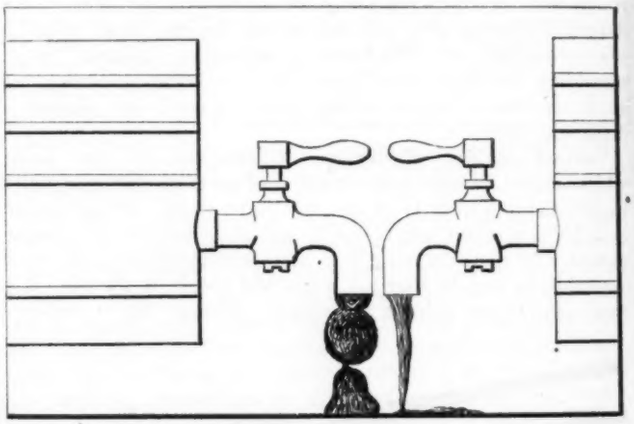
Fig. 4—Absence of a through bolt is dangerous

Arrangement and number of the bearings as well as the type of bearing used have much to do with the success or failure of any form of front axle, with which failure the best of steering gears is worthless. This is a matter that should be looked into, not superficially, but with care and great thoroughness, for not only is it a matter of moment, but a source of great danger as well. The same thing applies, although with lessened force, to the steering gear bearings. With the worm or similar type, there is a very heavy thrust load, which must be taken care of by means of a thrust bearing, since an ordinary radial-load bearing will not suffice. As improper mounting of this may cause it to seize, the whole design should be critically examined.

Materials also should receive the attention of the careful man who is buying his first car, particularly if he cannot afford to pay out a lot of money for repairs. Thus, it might be said in a general way, that other things being equal, a piece made of a forging is superior in strength to a piece which has been cast. Any metal which has been worked under the hammer, either hand or power, has been improved in quality of grain and strength, as well as reliability, if the metal has not been burned in the various heating processes.

VISCOSITY OF GASOLINE INTERFERES

Viscosity, which is a well recognized property in connection with "molasses in January," also impedes the flow of gasoline, in extent, depending upon temperature. The illustration, as here afforded, is a little far-fetched, yet even so,



Effect of Temperature on Liquids, as Molasses and Gasoline

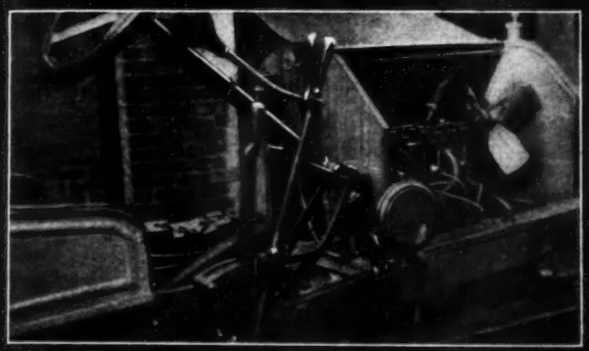
it may be of more than ordinary value, particularly if it will accentuate the point to be made.

It is a mistake to assume that, because gasoline does not noticeably thicken up, it is not interfered with in its flow through the nozzle of the carbureter. Taking gasoline of a specific gravity of 0.71, it has been shown that the amount which will pass through a nozzle of a carbureter under a given pressure will increase as the temperature is increased in the manner as follows:

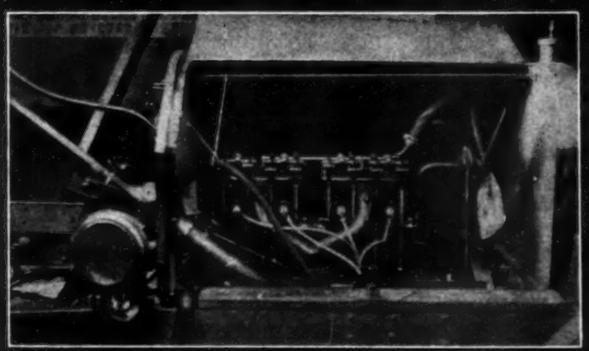
Temperature in ° F.....	50	59	68	77	86	95
Relative flow	1	1.073	1.145	1.212	1.27	1.335

Since nozzles in carbureters are not adjustable readily, and with any degree of certainty, it follows that such a great difference in the weight of fuel ejected, considering the differences in temperature named, is bound to lead to a certain amount of carbureter inefficiency of the kind which does not readily bow to treatment. This source of trouble goes to indicate that some means of maintaining a constant temperature is of the greatest advantage, and in a measure it argues for the adaptation of water (hot) jacketing, not around the depression chamber, as is usually the practice, but around the gasoline (float) bowl, in order to maintain a constant temperature of the liquid gasoline as it flows through the nozzle.

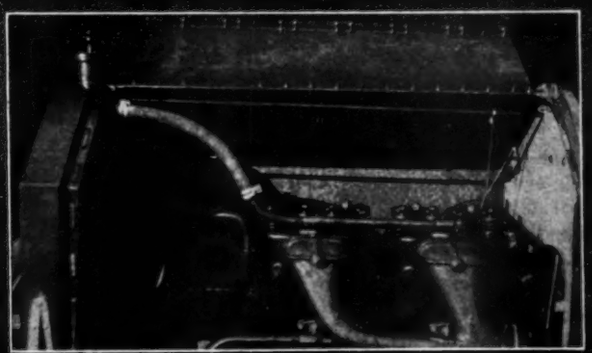
The Finished Machine and Its Two Constructors with Their Mechanic



Right Side Forward Showing Steering Post and Control Levers



Full View of Engine, Inlet Side, Showing Tappet Rod



Exhaust Side of Motor Displays Distinctive Shape of Manifold

Square Tube Radiator Gives Front a Business Like Appearance

Large Gasoline Tank Behind Affords a Large Mileage

HOW ONE AUTOMOBILE WAS BUILT

As striking proof that the family constructive ability is not confined to the older heads of the family, nor to the ability to make a good piano, an automobile recently constructed by two of the younger members of the Steinway family in New York City is a worthy example. This as presented on this page by a series of photographs of the finished car, was what is called an assembled product, in that the large units were purchased and assembled at the Steinway factory, Fifty-third street and Park avenue. The two young men responsible for the car, as shown alongside of it in the first picture are William R. and Theodore Steinway, who are grandsons of the founder of the piano business, and have served a four-year apprenticeship in the factory.

For the power plant, a Brownell was selected, this consisting of an engine, clutch, and transmission unit, the lower part of the cases being one piece. The engine is of four cylinders, 3½ bore by 4-inch stroke, rated conservatively at 17 horsepower, and is hung from three points, two forward arms and a rear pivotal point. The transmission is of the selective type affording three speeds forward and a reverse.

In selecting the running gear and frame, the pleasing lines of the B. L. M. type of frame, as made by the Merchant & Evans Company proved most attractive, while the rest of the running gear, as well as the steering gear, was obtained from the Stoddard-Dayton people. In placing the latter in the frame it was given considerable rake, while the large steering wheel lends the whole rather a racy appearance.

Ignition is of the double type, Bosch magneto furnishing the current in one case. A single set of plugs is used and they are placed in the side of the cylinder casting, thence projecting into the combustion chamber. The square-tube honeycomb radiator, their own design, was built by the A-Z Company, New York City.

The elimination of the usual rear seat or rumble allowed of making the frame very short, the 92-inch wheelbase, in combination with the narrow, 50-inch tread, making it possible to turn around in the narrow city streeets. Back of the seats is carried the seamless steel gasoline tank, which holds 10 gallons, this being sufficient fuel to travel more than 150 miles.

Wheels are of the wood artillery type, 30 by 3½-inch, fitted with Goodrich quick detachable rims and Republic Staggard tread tires. The ratio of the gearing of the live axle is such that a speed of 35 to 40 miles per hour may be attained.

Other small and special parts, necessary to fit the various units together into a symmetrical whole, were designed by the constructors, and either forged or cast right in the factory. Aside from the help afforded by the machinist, all of the work was done by the two Steinways, so that the car as finished is actually "home-made."

LETTERS INTERESTING

AEROPLANE STABILITY

Editor THE AUTOMOBILE:

[2,027]—In an article which appeared in "The Automobile" of September 2 there was a statement to the effect that as yet there had been no device of any kind incorporated into an aeroplane which would automatically balance it, when in flight.

In your estimation what would be the prospect for an appliance which would positively and automatically balance an aeroplane?

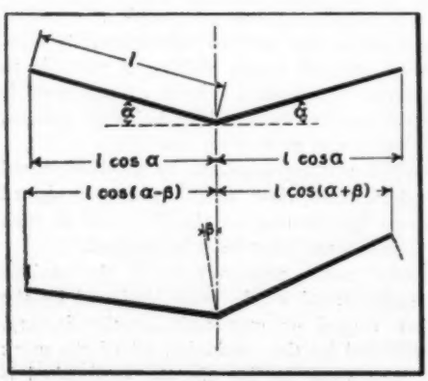
What is the pressure required, approximately, to warp the planes of a Wright aeroplane to their fullest extent when the machine is flying at its greatest speed?

Ottawa, O. L. R. B.

The statement that no device had yet been incorporated in an aeroplane to maintain its stability automatically should have been made with a reservation. The construction of practically all aeroplanes is such as to materially aid in maintaining stability. When the center of gravity of the machine is below the center of support, it has a natural tendency to remain upright. If the weight is hung too low, however, it has a tendency to act as a pendulum and rock the machine. Another idea, best exemplified in the Antoinette monoplane of Latham, is to set the wings at an angle with each other. If the machine tips to one side, the surface on that side increases and on the other decreases. This will be made plain by the diagram.

Either or both of these plans, however, appear to be insufficient to resist a sudden and violent disturbance of the air currents. Thus even the Antoinette has, in addition to its slanted planes, a system of auxiliary wings like those used by Curtiss; and the Bleriot monoplane No. 22, in which the low center of gravity is particularly prominent, uses the wing-warping system of the Wright Brothers. The statement of the previous article, therefore, is correct if understood to refer only to the control of the auxiliary wings or of the warping, which resists disturbances otherwise likely to overcome the machine's natural stability.

There is undoubtedly a great field for an appliance which will positively and automatically balance an aeroplane; obviously aeroplanes cannot be a safe and dependable means of transportation as long as they depend for their stability on the strength and skill of a single man. But the problem of inventing such an appliance is by no means as simple as it might appear. The inventor's first thought is to use some application of inertia, either the pendulum or the gyroscope. The pendulum, however, has proved too sensitive to the acceleration of the machine, which has the same effect on the hanging weight as an inclination. The gyroscope seems more promising, and it is likely that some form of it will ultimately be used.



Explaining Aeroplane Stability

If absolute stability can be secured by the construction of the machine, without the use of special contrivances, so much the better. It would naturally occur to one to try a combination of slanted planes and low center of gravity; and this line was followed by M. Santos-Dumont last winter. He was then working on the forerunner of the machine with which he recently flew five miles at the rate of 56 miles an hour. This experimental machine carried both the engine and the operator on an underslung frame; that is, at least two-thirds of the total weight at a distance of some three feet below the center of support. At the same time the planes were sharply inclined, at an angle of about 10 degrees. Now, in the machine which was the result of experiments with this trial model, both these principles were abandoned; the motor was placed on top of the planes, nearly as far above the center of support as the aviator is below, and the planes were set flat. Although we have no knowledge of M. Santos-Dumont's reasons for the change, the inference is that the original construction was found unsatisfactory. This apparently leaves a clear field for the man who will invent an automatic control for the auxiliary planes or warping.

In answer to your final question, we have no exact means of determining the pressure necessary to warp the planes of a Wright aeroplane. The only way to find out would be to apply a spring balance to the operating lever while the machine is in flight, and we doubt if Mr. Wright could be persuaded to try the experiment. However, it is quite simple to find an approximation which the necessary pressure at least could not exceed. The maximum force which a man can exert horizontally on a lever is about 25 pounds, and as the leverage between the controlling handle and the planes appears to be in the ratio of about three to one, this would give 75 pounds, directly applied, as the maximum possible force. The true figure is probably considerably smaller.

Mr. Curtiss has worked out an ingenious method of operating the lateral control, by a harness around the aviator's shoulders. The instinctive swaying of the body thus moves the auxiliary planes.

THE VACUUM AIRSHIP

Editor THE AUTOMOBILE:

[2,028]—In the August issue of "Machinery" I noticed an article recommending the development of the vacuum airship. The author has apparently made careful calculations for a ship 750 feet long and 150 feet in diameter; I checked over the figures and found them correct. He states that the envelope would contain 420 tons of air, which would be exhausted sufficiently to obtain a lifting effort of 370 tons. The airship itself would weigh 270 tons, leaving 100 tons for passengers and freight. The project seems very plausible, and I, for one, cannot see anything wrong with it. Perhaps the readers of "Letters Interesting and Instructive" would be interested in a discussion of this project. I notice that your magazine has always given much more attention to aeroplanes than to airships. J. B. WINTHROP.

Brooklyn, N. Y.

We read the article to which you refer with considerable interest, and, like you, checked over the author's calculations without finding any flaw. There are two very important objections we wish to raise, however. The first relates to the practicability of building the ship as light as 270 tons. This objection is passed over in the article with the comment that "the entire system has been worked out to the final detail, and has been attested by engineers of national reputation." We are hardly convinced by this statement. This point is crucial in the argument; the question of weight has been raised against the vacuum airship each time it has been proposed before, and has never been successfully answered. Yet the author casually says that he has solved this difficulty, and does not even give the names of the engineers who have supported him. A few calculations would have been better.

Moreover, it is not alone sufficient to provide that the framework shall resist the normal pressure of the air; it must also be calculated to resist very considerable bending moments and buckling stresses, due to being forced through the air by its engines.

Our second main objection rests on the possibility of obtaining as high a vacuum as is counted on. Exhausting 370 out of 420 tons of air corresponds to a vacuum of 30 inches, which is the highest that has ever been attained in steam turbine practice. Anyone who has ever observed the infinite precautions necessary to obtain and maintain this degree of vacuum in a turbine plant will be skeptical of obtaining the same in an airship, where both weight and space must be economized. In our opinion it will be absolutely impossible to make the numerous joints in the 0.018-inch steel sheets (the size specified in the article in question) sufficiently tight to hold this vacuum.

However, the article is completely discredited by the statement that the airship is designed for a *minimum* speed of 100 miles an hour, a ridiculous claim.

ANSWERED AND DISCUSSED

MORE OIL COOLING

Editor THE AUTOMOBILE:

[2,029]—I would like to learn through your department of "Letters Interesting, Answered and Discussed," if a light oil, such as Havoline, would be safe to use instead of water in the radiator of a car with a four-cylinder vertical engine, of the thermo-syphon system of cooling? Last winter I used a mixture of one-third alcohol, glycerine and water, but found it troublesome, owing to the evaporation of the alcohol. I am inclined to try oil this winter, and want to know what you think of it.

J. A. RENÉ.

Superior, Wis.

This is a point that was covered in the letter (2019) of E. W. J., which was published in our Sept. 16 issue, except for the thermo-syphon point. This latter will be sufficient to bar the use of oil, as the latter is so heavy that it will not circulate except through the energetic action of a good pump. If you are in a position to add a pump to your circulating system, oil will do very nicely, as brought out in the letter referred to. We cannot give you a table of the properties of oil at low temperatures because no such table is available.

In case you did not like the mixture used last winter, why do you not try a calcium chloride solution, with which any desired temperature within reason may be obtained, and which is free from the objectionable evaporation you mention? That is, when using this, only the water evaporates, and this may be replaced by simply adding more water. Then, about once a month, the specific gravity of the mixture should be checked up. The only reason for this lies in the fact that if allowed to get too strong, the calcium chloride will precipitate out and this precipitate, in the form of a white powder or crystals, will clog up the system and prevent the remaining liquid from circulating. As the accompanying diagram of the freezing points of various strengths of calcium chloride solutions will show, the temperature desired may be attained by varying the amount of calcium.

The best way to make the solution is to first make a saturate solution of the chloride, and then use this, by adding water to it until the desired mixture is reached. This is done by taking half a gallon of water to 8 pounds of chloride for each gallon of saturate solution desired. It is a good idea to make a gallon or so extra to have on hand. You can tell if this makes a saturate solution by the fact that some of the crystals must remain in the bottom undissolved. If this is not the case, add more crystals until some of them will not dissolve. This solution is made applicable to the cooling system by adding to it more water, and finally when the right proportion is obtained, a handful of lime to render it slightly alkaline. The latter is done as this solution is said to have an acidic action on the metals of the whole cooling system. As the latter has never been proven, the simple precaution of the lime will counterbalance it. The diagram shows plainly what temperatures may be obtained by this solution.

SAVANNAH WINNER'S SPEED

Editor THE AUTOMOBILE:

[2,030]—Will you kindly publish in the next issue of your valuable paper, "The Automomile," the average speed of the winner of the heavy car race at Savannah Thanksgiving Day, 1908? JOHN A. HAMILTON.

Columbia, S. C.

At Savannah, the heavy car race was won by Wagner driving a Fiat. He covered the 16 laps of 25.13 miles each, a total of 402.08 miles, in 6 hours 10 minutes and 31 seconds, which is an average of 65.08 miles per hour. It might be interesting to you to know some of the details of the car. It was a four-cylinder motor of 155 mm bore by 160 mm stroke, practically 6.1 by 6.3, and was rated at 120 horsepower. The car had 50-inch tread, 107-inch wheelbase, and weighed 2,750 pounds. The tire and wheel equipment was 105 by 870 fronts and 120 by 880 demountable rear tires, all being Michelins. These sizes converted into inches and fractions are: 4 1-8 by 34 1-4 fronts and 4 3-4 by 34 11-16 rears. The car has double chain drive and Bosch magneto.

USE OF UNIVERSAL RIMS

Editor THE AUTOMOBILE:

[2,031]—Will you please inform me on the following matters? I have regular clincher rims on my car. If I have universal rims put on can I use my same old casings with safety, there, of course, being no lugs on the universal rims? W. SEVERANCE.

Stanford, Ky.

Yes, when universal rims are fitted to wheels for the express purpose of using old clincher tires on those rims, special flanges are supplied which hold the clincher tire safely on the rim. Then when the old clincher type of tire is worn out, and new ones are purchased, it is possible to obtain another set of different flanges which will hold the regular style of tire intended to be used with those rims. That is, with the exception of the flanges, which represent a very small expense, the universal rims are just what the name implies, universal, any kind of tire may be used with them, and, of course, used with safety, which is implied

WANTS LARGER TIRES

Editor THE AUTOMOBILE:

[2,032]—I have a car which is several years old and equipped consequently with very small tires. I have added a number of things to the extra equipment, as well as changing several parts of the mechanism. All of these changes have added to the weight of the car, so that now I feel that the weight per tire is too large for the tires now on the wheels. This contention is carried out in driving by the very low mileage which I obtain from the various tires. Now, I need another set of new tires and instead of getting the same old too-small size, I want to get the new larger sizes. To do this without buying new wheels, which I do not care to do now, I must use odd sizes. Can you give me a list of the odd sizes now obtainable, as well as a list of makers who make them, and local dealers who handle them?

New York City. G. J. O'HARA.

Your decision to use larger tires is a very wise one, and is to be commended. The so-called "odd sizes" have not been made very long, and even now are not

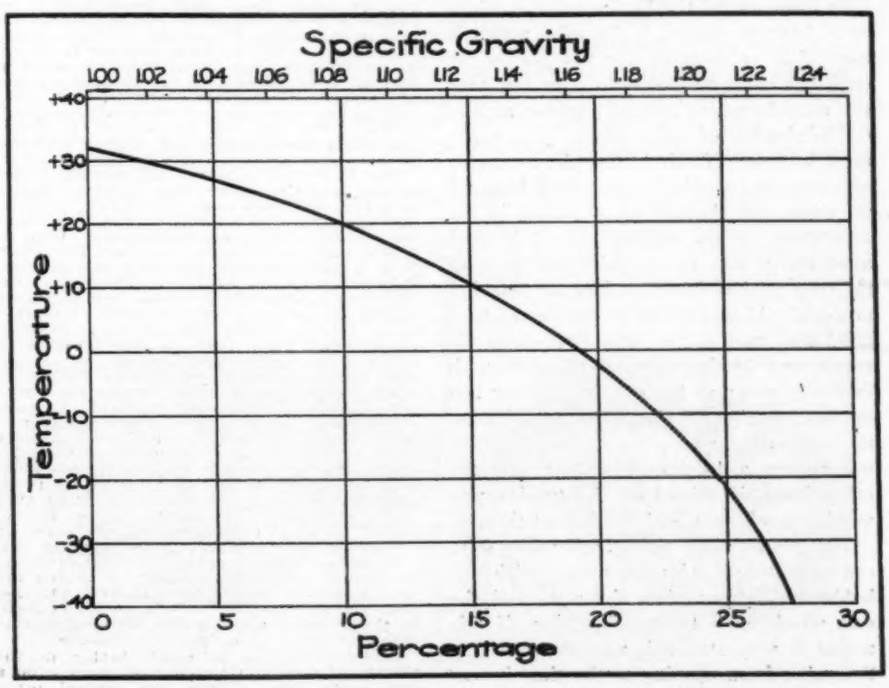


Diagram of Freezing Points of Various Solutions of Calcium Chloride in Water

made by all makers. In fact, we would not care to give you a list of either makers or dealers who make or handle them, for we are not at all sure how many manufacturers have taken to them. On the other hand, we can help you to the extent of giving you a list of such sizes as have been made, and probably are made now. These are:

New Size	Old Rim Which It Will Fit
28 x 3 1-4	28 x 3
31 x 3 1-2	30 x 3
31 x 4	30 x 3 1-2
33 x 4	32 x 3 1-2
35 x 4	34 x 3 1-2
35 x 4 1-2	34 x 4
35 x 5	34 x 4 1-2
36 x 5 1-2	34 x 4 1-2
37 x 4	36 x 3 1-2
37 x 5	36 x 4 1-2
38 x 5 1-2	36 x 4 1-2
39 x 5	38 x 4 1-2
41 x 5	40 x 4 1-2

In making the change, it will be advisable to go to the largest size you can get for your rims as the table above shows.

VALVES MAY CAUSE IT

Editor THE AUTOMOBILE:

[2,033.]—I desire to express my appreciation for your answer and opinions to my letter No. 1,990, published in "The Automobile" of August 26. Have followed out your suggestions, but have been unable to detect any thing at fault with the water-circulating system. I feel quite positive that the source of trouble does not lie there.

Could not the trouble described, however, be caused by defective valve action? The valves sticking in their guides, due to a too close fit, or lack of lubrication here, or because the valve stems have become encrusted with carbon or gummy oil. Would not a heavy oil be apt to help in causing this trouble?

These questions show the line on which I have been working. I am not sure that I am correct in my deductions yet after the valves had been cleaned and ground, no trouble arose in taking the hill that I mentioned in the former letter. The unfortunate part of it all is, however, that after the car was driven about 600 miles I again attempted to take this hill and had a recurrence of the old trouble. Anything that you have to comment on this subject will be most thankfully received. SUBSCRIBER.

New York City.

Any one of the troubles mentioned might cause heating, that is, if the valve action is incomplete or sluggish, for any reason the engine is liable to overheat. For this reason manufacturers generally advise against the lubrication of valve stems. The argument in favor of this is that the necessary clearance is provided in the machining of the parts, and checked up or proven in the assembling of the engine. If oil is used after this it may be too thick and gum up the stem so that the valve does not function properly. If you grind in the valves to a good seat, and at the same time clean the stems and guides very thoroughly with kerosene, you may be sure that further immediate trouble of the same kind is due to some other and different cause, which will require a different treatment. On the other hand, if this stops the trouble you will know where to look for it next time.

The reason why the sticky valve stem causes heating is this: Gummy or sticky oil holds the valve against the action of the cam which tends to open it. Now, if this action is very strong it may even prevent the valve from opening at the time it was designed to and similarly cause it to be held open too long. The former in the case of the inlet would not furnish the engine sufficient fuel. Opening the throttle wider would furnish a richer mixture but the valves would not allow any more of it to enter. The two in combination would cause heating, as would also either one of them alone. Then, holding the exhaust valve closed after it was supposed to be open, would retain the heated gases in the cylinder and cause it to heat. This is a prolific cause of heating and one that marks the difference between the old and the up-to-date engine.

Formerly designers laid out the cams and valve motions so as to open the exhaust at the lower dead center. Later on experience taught that an earlier opening gave much better results. This latter might be paraphrased thus, if you are going to throw away the gases with their attendant heat, why not do it in a hurry?

As time passed and this method was proven right, the angle of advance or lead given to the exhaust opening increased until to-day it is possible to find very high speed motors in France having an opening as early as 62 degrees before the lower dead center. Angles as high as 45 and 50 are quite common, although no one angle could ever be said to be universal, designers differing very widely on this point.

HOT WALLS EXPLAINED

Editor THE AUTOMOBILE:

[2,034]—Your comments in a recent issue on the subject of hot cylinder walls indicate that you fail to grasp the full value of hot walls. I have had many people tell me that they knew a cool engine would pull better than a hot one because their engine lost power when it got hot. This is undoubtedly true. I have seen lots of men who could not fly, but the fact that one or more men have successfully flown demonstrates that flying can be done. So a single proof that a hot engine will develop more power than a cold one is sufficient. If one can do this, others can. Heat is the working medium in an engine. Take the heat away from the gases as fast as it is formed by the combustion and no increase of pressure results. Take away half of the heat and half the available power is lost. This can not be denied. It should need no argument to prove further that loss of heat through the walls is loss of power.

But if further evidence is required, attach an engine to a known load, a prony brake, or a fan, and work it at full power. If properly designed and lubricated, it will continue for hours. But turn cold water into its jacket and you at once cut down its power. This is due to cooling the walls and not only taking away heat, but also stiffening up the oil. The cooling of the charge can be shown by the indicator. It can be heard in the exhaust which, having less pressure, has less noise. And since there is less pressure at the end of the stroke it should be evident that there was less to work with during the stroke, unless some other reason than wall temperature difference exists. You are quite right that it is the aim of every designer to start with a high pressure and work it down to as low a point as possible before exhausting it, but no designer who knows his business will purposely reduce pressure by needless cooling before he is done working with the hot charge. No steam engine builder would think of putting a cooling jacket on his steam cylinder and it seems strange that gas engine builders will cool their cylinders needlessly low. That auxiliary valves are used to get rid of the gases quickly does not bear on the question. It is certainly right to throw away what cannot be used and to throw it away as quickly as possible.

Modern practice is much better in the matter of cooling temperatures than even a few years ago. There are several other things to be said in favor of hot walls. They mean faster heat radiation to get rid of the "excess" and so less radiator or cooling flanges needed. (That word "excess" is misleading. It does not mean that there is too much heat in the charge, but that the walls absorb more than they can stand and they must get rid of what they have absorbed in excess of their ability. Their ability is measured by the oil used, the likelihood of warping and the danger of their heat igniting the next charge too soon.) Heat radiates about as the square of the absolute temperature. So running the cylinder a little hotter permits a large reduction in cooling surface needed. This is along the line of reduced weight and cost. I look forward to the day when engines will be run much hotter than at present.

Your editorial on "Body Design" deserves a second reading. "Utility is the larger half of art" is a truth that cannot be told too often. Too many buyers in the past bought not to use but to show to their neighbors. No wonder second-hand rigs are cheap now. And no wonder that many people still hesitate about buying an automobile.

Reading, Pa. CHARLES E. DURYEA.

ADDRESS OF FRENCH MAKERS

Editor THE AUTOMOBILE.

[2,035]—Will you please favor me with the addresses of the following French firms, or give me the name of some French publication which I can get in this country: Lion-Peugeot, De Dion-Bouton, Panhard & Levassor, Anzani, Gnome?

The above are the makers of the special long-stroke motors and aeronautical engines. J. D. MOONEY.

St. Paul, Minn.

The addresses which you request are as follows:

Lion-Peugeot, Les Fils de Peugeot Frères, 38 1-2 avenue de la Grande-Armée, Paris.

De Dion-Bouton, De Dion, Bouton et Cie., 36 Quai National, à Puteaux (Seine), Paris.

Panhard & Levassor, Société Anonyme Panhard et Levassor, 19 avenue d'Ivry, à Ivry (Seine), Paris.

Anzani, Anzani, 71 1-2 quai d'Asnières, Asnières, Seine.

Gnome, Société des Moteurs Gnome, 49 rue Lafitte (Seine), Paris.

In case you wish to look into the matter of aeronautical motors, and that only, it would be wise to consult all of the French constructors, although there are a number of firms in this country making a motor applicable to this work. However, we are adding a number of addresses of French motor constructors to your list. The additions are as follows:

Antoinette, Société Antoinette, 10 rue des Bas-Rogers, Puteaux, Seine.

Aster, Société de Constructions Mecaniques, l'Aster, 74 rue de la Victoire, (Seine), Paris.

Buchet, Usines Buchet, 49 rue Greffulhe, Levallois-Perret, Seine.

Esnault-Pelterie, Esnault-Pelterie, 49 rue de Silly, Billancourt, Seine.

Farcot, J.-A Farcot, 9 boulevard Denain, Paris.

Renault, Renault Frères, 139 rue du Point-du-Jour, Billancourt, Seine.

Sizaire & Naudin, Etablissment Sizaire et Naudin, 79 rue de Lourmel, Paris.

WHAT CAUSED MISSING

Editor THE AUTOMOBILE:

[2,036]—Thinking your readers might be interested in a puzzling case of missing fire, I send the following: I had just installed a magneto and overhauled my Haynes car. It worked finely for a time, but all at once began to miss fire on two cylinders. I went over the wiring and cleaned out the carburetor, but no improvement. Finally, while leaning over with head close to carbureter I heard a whirring sound, and traced it to a one-inch slit where the packing between cylinder and carbureter pipe had come out. This inlet, of course, spoiled the mixture.

Hoping this may be of service to some troubled motorist. WILLIAM SEVERANCE.

Stanford, Ky.

PROGRESSIVE methods are bound to find an outlet, and the growth of the business of the Anderson Carriage Company, Detroit, Mich., makers of the Detroit electric carriages, is ample evidence of the support the buying public most heartily gives a well conducted enterprise. For 1910 the company proposes to extend the line, more than double the output, and introduce such refinements in point of detail as the past year's experience with more than a half a thousand cars would seem to warrant.

The title figure will afford something of an insight to the art side of the electric situation as it is coupled up to Detroit electrics, and it is needless to say that the output of this progressive company is garbed in the several very excellent designs of bodies in keeping with the requirements, and at the command of the patrons. The body situation, then, will not have to be discussed at great length, and it will be enough to point out that the line includes everything from the little "piano box" to the most luxurious type of town car.

A Regular in the Detroit Line.—The Model D chassis is shown in the lower illustration on this page with the battery divided in two sections of two trays each and located at front and hind end of the chassis, thus bringing the body in the mid position, which makes for easy riding, and places the battery where it may be examined readily, at will. The weight of the battery is distributed in such a way that half comes on each set of springs, and this is quite an important point, making the spring problem easy and reducing wear and tear on the car.

When the Model D car is fitted out as a brougham it presents a neat and distinctive appearance, rides remarkably well, and is an easy going car with a remarkable ability for mileage, according to experiences gained. Some of the leading specifications of this model are as follows:

Wheel base, 79 inches.
Tread, 51 inches.
Wheels, 32 inches front and rear.
*Tires, 32 x 3½ inch.
Battery, 24 cells, 13 M. V. size.
Speeds, five, graded to 5-8-13-17-22 miles per hour respectively.

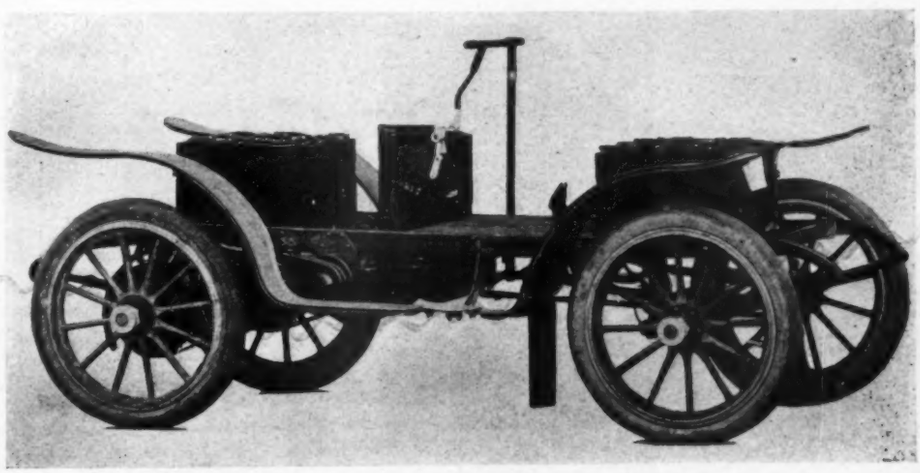
This car as a brougham weighs about 2,300 pounds, has a side lever steering gear, is equipped with two sets of brakes, one of which is on the motor and the other is on the rear wheels, of the internal expanding type.

The motor of Model D is of the enclosed type, series wound, and has a high torque characteristic, which assures the ability of the cars so fitted, will be maximum when it comes to hill climbing, soft going, and other unusual road conditions. Then, as will be well appreciated by those who may have given the matter thought, the speed of the car will be high when road conditions permit, which is to a certain extent an automatic condition.

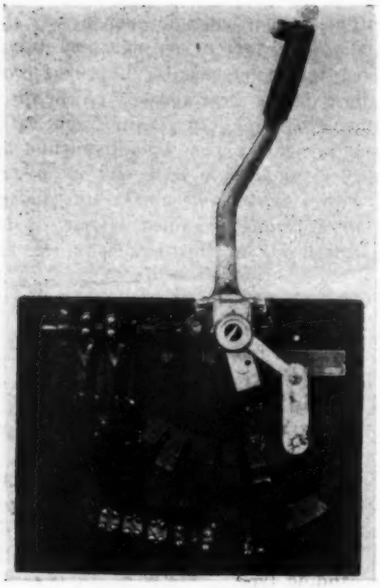
The motor is of liberal rating, has a low temperature coefficient, will stand heavy overloading for a considerable period of time, and the commercial efficiency under average loading is very high indeed, thus insuring that the fixed losses are a minimum, while the high overloading ability is a guarantee that the copper losses are reduced to the lowest limit. These are all matters of the greatest moment to an owner of a car, and on account of the careful manner in which the electrical problems are worked out the battery "draft" is maintained at a low ebb and the radius of action is therefore on a very satisfactory basis.

Difference Between Now and Yesterday—Time was when electric carriages were not quite so satisfactory as was the wont, due to the relatively short distance that could be made on a single charge of the battery. The difference, which is now very great, when reference is made to mileage per charge of bat-

*Goodrich-Palmer web double tube clincher, 10 layer fabric.



Model D Chassis, Showing Equal Distribution of Battery Weight



Model D, 1910 Controller

tery, or better yet, per kilowatt of capacity of the same. In divers other ways the situation has undergone improvement, such as the controller, which is more simple and reliable.

But this same simplicity has been carried into the car as a whole, and by a process of elimination all the little sources of trouble have been removed. This is instanced in the rear axle for Model D car, to which is attached the distance members of the lattice form. The axle is fitted with Timken roller bearings, thus caring for friction and lateral thrust. The internal expanding brakes are of good diameter, and the shoes, which show on the axle, are faced with Raybestos, a fabric of asbestos interlaced with copper. This material is quite strong, having a tensile strength of about 2,800 pounds per square inch, and at 1,000 degrees Fahrenheit it is immune from trouble, while the coefficient of friction is better than .20 when the material is properly applied, as it is in this case.

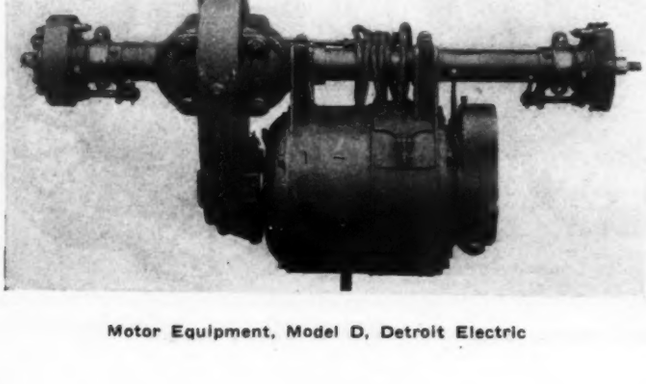
Renold Silent Chain and Flexibility—An examination of the Model L type of motor shows more clearly than usual the aims of the designers to accomplish the main purpose, which is to assure that the mechanism of the transmission system will be flexible, efficient and durable. This particular example, with the covers removed, opens up to view the double reduction system, utilizing Renold silent chains to make the transmitting connection between the motor and the live rear axle.

The end of the live shaft is exposed, showing a square, with a nut, castellated to accommodate cotter pins, and with the hubs of the rear wheels broached to fit tightly over the square shaft. Considering a long bearing, the results are very satisfactory. This view also presents the internal expanding brake shoes in such a way as to indicate great rigidity, which is essential to good work.

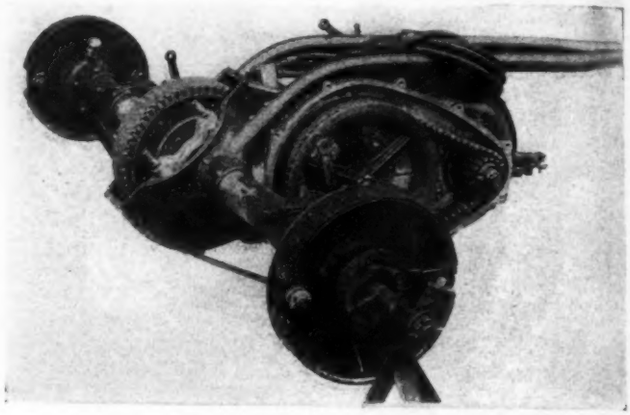
An Eye for Detail Makes for Success—Glancing over the cars in a general way at the plant of the maker discloses in a thousand ways the closest attention to detail. The batteries are received in the "green," and under the guidance of men of skill they are most carefully handled. The "trays," which hold the cells of battery, are made of selected grades of oak, properly seasoned, and so put together by dovetailing that they would stay in shape were no other fastenings used. The brass screws used to further bind the crates are countersunk, and the jars which hold the elements composing the cells of battery are so closely and properly nested that there is no likelihood of cell breakage, which form of difficulty was once so prevalent as to be a great nuisance and a source of considerable expense.

The electrical wiring is nicely done, the sizes of wire used being adequate to assure a minimum "drop," even under an excess draft from the battery as when the cars are accelerated on a grade under inferior road conditions. In a mechanical sense the cars are carefully constructed, using selected grades of material throughout, all fits are carefully made, involving suitable limits of tolerance, and of noise there is positively none.

In the steering gear all the links and levers are made of fine grades of steel, the shapes are such as to assure an adequate factor of safety, and the means for locking are standard in every way. Ball and socket universal joints are used in every case demanding them, and the bearing surfaces are so great, due to the use of large diameter balls, that wear is a minimum, yet even so, adjustment, to eliminate lost motion, may be made at will by the user without having to display a large measure of skill.



Motor Equipment, Model D, Detroit Electric



Silent Chain, Double Reduction Drive Used on Model L

POPULARITY OF ELECTRICS INCREASING

By W. C. Anderson, Pres. Anderson Carriage Co.

Enormous increase in the volume of business now being done by electric automobile manufacturers, certainly must be accepted as being first-class evidence of the degree of interest which the public is beginning to take in the electric automobile.

The utility of an electric car has never been as great in the past as it is to-day, and, therefore, it is bringing to the defense of the electric auto a class of well-posted buyers, who certainly do the industry great credit. To-day, the man who buys an electric in preference to any other style of propelled car, is not one who would either be considered as lacking in judgment.

Originally electric autos, were very much like they say religion is, namely, mostly indulged in by the ladies, and while there has not been a spiritual revival possibly among the men, there has certainly been an electrical revival, and the number of converts who are now showing their confidence in the permanency of the electric auto and its desirability, is really beyond the belief of a person who has not carefully noted this fact. As surely as every effect has a cause in any other phase of life, the same is true in the electric automobile. Its popularity will widen with the future of its development because of the natural love people have for a clean method, and a safe method, of being conveyed. So often it is better expressed by the people who come to buy an electric when they make the remark, that they want something that is "sane and simple," and therefore they investigate the merits of an electric car. The larger mileage has not escaped the notice of those who contemplate the purchase of some kind of an auto. Judging from demands, the interest of the public in the electric car cannot be overestimated.

UNDER the corporate name of the Metzger Motor Car Company, Byron F. Everitt, William Kelly and William E. Metzger will soon place upon the market a new car to be known as the Everitt Thirty. These men, it will be remembered, in company with W. E. Flanders, formed the E-M-F company, selling a car of that name. This concern was purchased on May 1 by the Studebaker Automobile Company, Mr. Flanders remaining as general manager. All of the men are well known in the trade.

The car will be a four-cylinder machine of the shaft driven type, designed by Mr. Kelly. This will be equipped with but two forms of body, a runabout and a five-passenger touring car. The latter, shown at the head of this article, is seen to possess pleasing lines. The wheelbase is long, the wheels are large, and in combination with a good spring suspension, should result in a very easy riding car. The spring suspension is seen to be: semi-elliptic springs in front and full elliptic scroll-ended springs in the rear. The former are fixed at the front end and shackeled at the back, while the rear springs are attached to the under side of the frame, which is upswept back of the tonneau entrance for this purpose. The combination gives a low center of gravity, and a low step, without losing anything from the very important clearance. Not only is the rear end upswept, but the frame has another drop just forward of the dashboard, making it what is known as a "double drop" frame. This is the form that has been adopted by the best foreign makers, so that its use in a moderate-priced domestic car represents an unusual value, and one not heretofore offered in this class of car.

The power unit is carried well back from the front end of the chassis, rather farther than usual, in fact, the front line of the radiator being behind the front axle. The latter is of the popular I-section, and the material, steel. Spring seats are forged integral.

Pressed steel is used very freely throughout. The fenders, fender supports, steps, and many other parts are pressed from this material, which offers at one and the same time strength and light weight, an unusual combination. The fenders are both carried down to the frame on the inside, which enclosure prevents any mud or dirt from the road splashing up on the occupants.

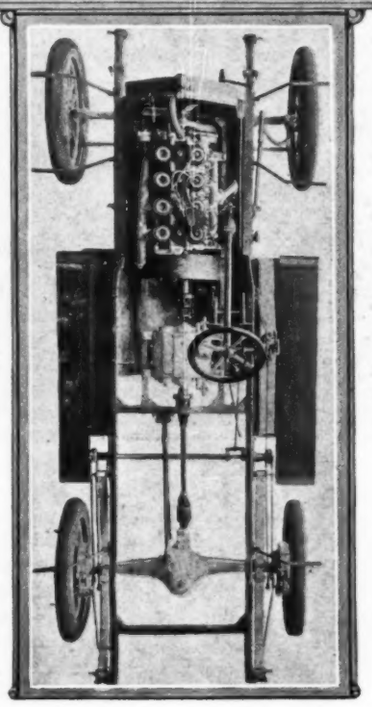
Back of a radiator of the Mercedes type, under a long hood, is located the engine and clutch. Behind the dashboard a liberal space is allowed for the driver's foot room, this being a point in the comfort of the driver. The steering wheel is given a large rake, which lends to the whole side view of the car a low, fast appearance, not at all distasteful. A large diameter steering wheel affords the driver excellent control over the car regardless of whether he uses one hand or both. Below the wheel, on the driver's left, are placed the spark and throttle levers.

Two foot pedals of the piano type are provided for control purposes, both working on the push forward principle. Besides these, there is a foot accelerator for the sudden control of the car in heavy traffic, such as in the crowded city streets, or in an emergency of any kind. The side levers are short, the emergency brake lever being placed on the outside. This is held in any desired position by a ratchet on the under side of the quadrant bar, which is notched for this purpose. The inner lever is the change speed operating means, and is the shorter of the two. While the new car has not been placed on the market, several cars have been built and tried out on the Detroit streets.

About thirty days ago the company purchased the factory of the Jacob Meier Company, trunk manufacturers, located at Milwaukee avenue and the Grand Trunk Railroad, as shown by the cut on this page. The plans call for the manufacture of 5,000 cars during 1910.

Large and Commodious Plant in Detroit to be Occupied by Metzger Motor Car Company

What the K-10 Pullman Is Like



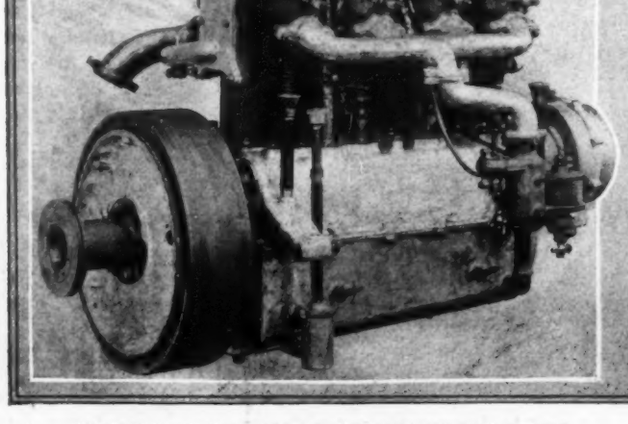
FOUR models, in many styles of body, and with three differing sizes of engines will constitute the output of the York Motor Car Company, York, Pa., for the coming season. Of these, the model bearing the mark K-10 will be the leader, and since the construction of the others follow this one in nearly every particular, it will be sufficient to describe that. The four models are: K-10, a four-cylinder car, to be had with runabout, baby tonneau, or five-passenger touring car bodies; 4-40, a four-cylinder car of greater power and speed, which is turned out with but one body, a gentleman's roadster; M, a touring car with a large and powerful motor; and finally, a new car, to be known as Model O, the details of which are not ready yet. This latter will be a high-class, light car, to sell at a lower price than Model K-10.

Probably the most interesting part of the car is the motor. This is of the four-cylinder type, with cylinders cast individually. Each cylinder has a widefaced flange cast on each end, these being machined so as to fit together. Then, in assembling, the adjacent flanges are bolted together, making the power plant as a unit. It is argued in favor of this construction that it has all of the advantages of the block construction with none of its disadvantages. In addition, this method allows of the use of five bearings on the crankshaft. This makes the shaft very stiff and strong, since the power impulse from each cylinder is taken by a pair of bearings, equally spaced on each side. Not only is rigidity of the shaft itself gained in this way, but the danger of lack of alignment is reduced to a minimum, and lubrication is improved.

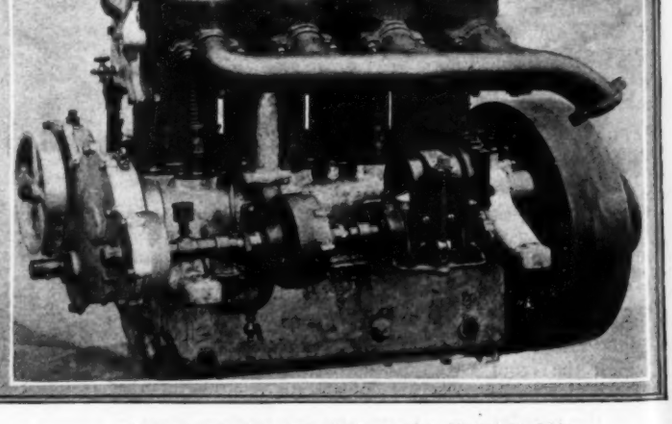
Cylinder Dimensions Increased—The size of the cylinders has been changed over that of last year, that is, the stroke has. The sizes now are 4½-inch bore by 4¾-inch stroke. In the lengthening of the stroke is to be seen the working out of the most modern tendency in engine construction, namely, the leaning toward long strokes. While this particular engine is not unusually long, the ratio being but 1 to 1.05, it denotes the movement now being made to take advantage of the superior power afforded by the "long" motor. The valve sizes have been increased, not only to care for the additional cylinder capacity, but still more than that, to allow of a better running, higher powered engine. So it is that, although the bore is not changed, and consequently the power rating by formula would not change, the output of this motor has been increased until it actually develops more than 35 horsepower on the test block. For this reason the company will call the engine a 35-horsepower unit.

Other details of the motor remain the same as in previous years. These include the well-known T-head cylinder form, with valves located on opposite sides. This symmetrical construction results in the placing of the inlet on the right side and the exhaust on the left. The right-hand placing of the inlet and carbureter puts this important adjunct where it is very convenient to the driver for adjustment or repair. Similarly, it takes the heated exhaust pipes out of the way of ordinary roadside work. The valves are located high up in valve pockets, which are well water-jacketed. The large flanges at the ends of the cylinders allow of the use of unusually large core prints at that point, which results in more accurately located cores, and also allows of the more complete removal of the core sand. Both points conduce to better cylinders. The same opening is used as the basis of the water circulating system, the pump feeding the liquid into the rear or hottest cylinder, from which it works its way forward through the interior of the cylinder water jackets to the front cylinder, the core hole cover plate there carrying an upward extension in the form of a pipe, to which the hose from the radiator attaches. This makes the system very simple.

Ignition System Most Complete—To insure perfect ignition, insofar as it is possible to have it perfect, two separate and distinct methods of firing the charge are fitted to the car, either one being complete in itself and self-contained. The source of current for the one is a high tension Bosch magneto, while batteries, acting through a single coil and distributor, furnish the



Inlet Side of Motor Shows Carbureter to Advantage



Accessories Are Grouped on the Exhaust Side

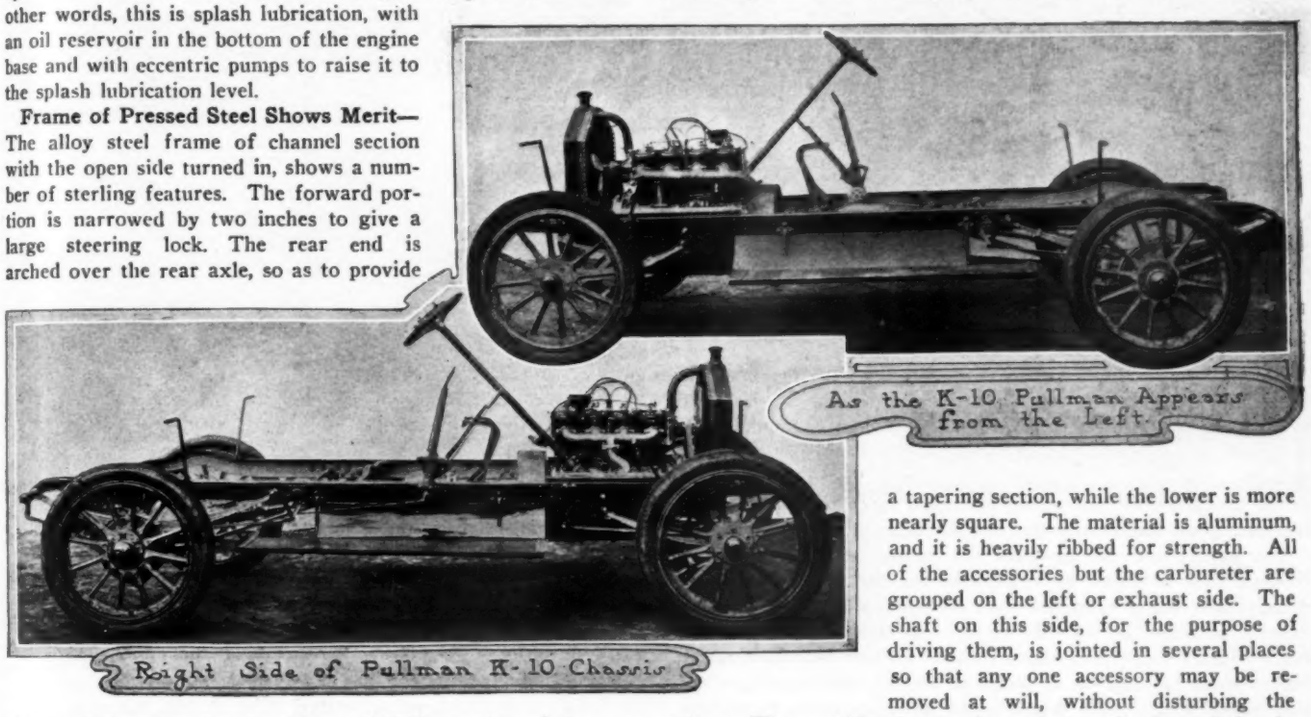
alternate. The plugs for the magneto set are located in the top of the valve caps, over the inlet valves, while those for the battery-distributor system are placed in the side of the combustion chamber, projecting just above the inlet pipe.

One very marked feature of the engine is the oiling arrangement, which is distinctive. This is so designed as to furnish perfect lubrication at all times and under all weather conditions, and also to insure a continuous, perfect level, regardless of engine speed. The system includes an eccentric-driven pump located on the rear of the subbase, which receives the oil from the lower compartments of the base and delivers it to the upper compartments, provided wtih reservoirs. From these the oil is delivered to the base proper, where the splash lubrication takes place. The height of the oil in this base is controlled by eccentric valves, with stems extending outside of the base and with hands pointing to a dial marked in spaces one-fourth of an inch apart. The oil is raised or lowered by moving the hands. In other words, this is splash lubrication, with an oil reservoir in the bottom of the engine base and with eccentric pumps to raise it to the splash lubrication level.

Frame of Pressed Steel Shows Merit— The alloy steel frame of channel section with the open side turned in, shows a number of sterling features. The forward portion is narrowed by two inches to give a large steering lock. The rear end is arched over the rear axle, so as to provide plenty of clearance for the rising and falling action of the rear axle and springs when surmounting an obstacle. The frame has been lengthened over last year by 7 inches. This makes the wheelbase 112 inches and allows of the use of a more commodious body than before. Both front and rear springs are semi-elliptic, fixed at the front end and shackeled at the rear. The front axle is an I-section, drop-forged, while the rear axle is of the full floating type, mounted upon Timken bearings. The brakes are mounted on the rear wheels and are of two types, internal expanding and external contracting. These are of large diameter, lined with removable heatproof lining, and operate through equalizing devices, which insure an equal pull.

Almost every part of the car is now made in the Pullman factory, this including axles, steering gears, bodies, upholstery work, tops, all sheet metal work, as well as the more usual engine and transmission. This is a point well worth consideration, for it means that in case of trouble, spare and repair parts can be shipped instantly, which is not the case with an assembled car. The equipment of the cars is very complete. The factory figures for the 1910 output show that 2,000 cars will be completed, these being divided over the four models.

The crankcase is in two parts, the upper and the lower. Both of them partake of the shape of a box, the upper half being of a tapering section, while the lower is more nearly square. The material is aluminum, and it is heavily ribbed for strength. All of the accessories but the carbureter are grouped on the left or exhaust side. The shaft on this side, for the purpose of driving them, is jointed in several places so that any one accessory may be removed at will, without disturbing the others. The centrifugal pump is nearest to the front, being located midway between the first and second cylinders. The magneto is located farther back, being placed opposite the last cylinder. It is strap-held in place, a single bolt with a pivot at the bottom holding it. By loosening the nut, the bolt may be revolved out of the way, and the magneto picked right out.



As the K-10 Pullman Appears from the Left.

Right Side of Pullman K-10 Chassis

CLASSIFICATION OF GASOLINE FRACTIONS

Generally, automobile fuel, which is in liquid form, is capable of classification, in the manner as follows:

(a) Olefiant hydrocarbons;
(b) Aromatic hydrocarbons;
(c) Alcohols;
(d) Combinations of the three.

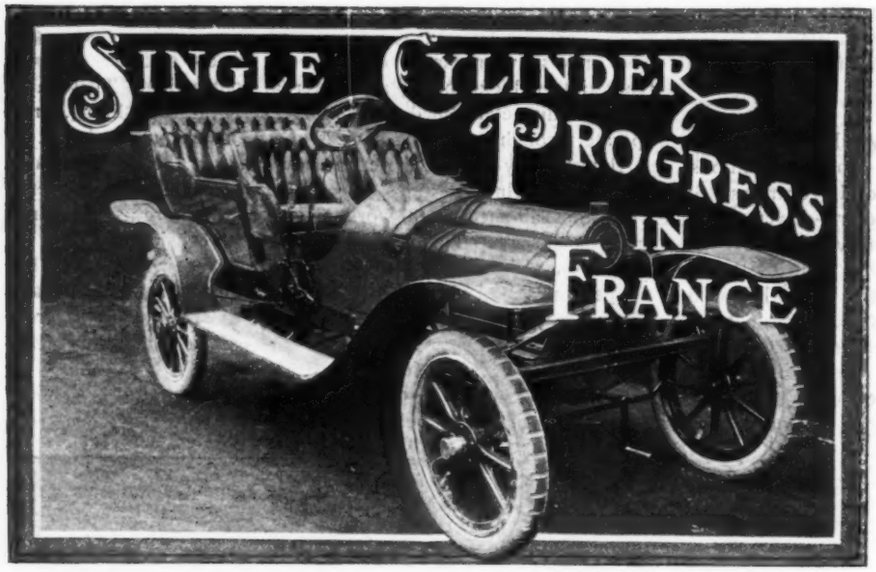
The olefiant class belongs to the series which form, or produce an oil; specifically designated as colorless, gaseous hydrocarbons called ethylene.

The formula of ethylene is C_2H_4, and the compound may be produced by the action of concentrated sulphuric acid on alcohol. It is an unsaturated compound and combines directly with chlorine and bromine, to form oily liquids (Dutch liquids) hence the name, "olefiant." The same compound is also called ethene, elayl, and formerly it was known as bicarbureted hydrogen. The aromatic class include a long series of hydrocarbons such as may be derived from benzine, the formula for which is C_6H_6.

SOUTHERNERS INVESTIGATE GOOD ROADS

PROVIDENCE, R. I., Sept. 27—The party of Southerners, who, as the guests of B. F. Yoakum, of the Rock Island-Frisco railroad, are touring New England to study its systems of roads, arrived here Sunday in four Packard cars, in the midst of a driving down-pour of rain. The party has now been ten days on the road. They came down from Boston by way of Plymouth and Fall River. Poor roads were encountered between Plymouth and Fair Haven, and the machines skidded badly in the mud between New Bedford and Fall River. There were no mishaps, however, and the party was not forced to stop at any time.

The party consists of representatives from Louisiana, Arkansas, Texas and Oklahoma. Mr. Yoakum, who is an enthusiast on the subject of good roads, suggested the tour in a speech at Shawnee, Okla., August 17, and is paying the expenses. The state road officials have co-operated by giving frequent talks on the construction of the roads met on the tour. The sustained interest has surprised every member of the party.



PARIS, Sept. 24—The high price of gasoline, together with special methods of taxation and, in a smaller degree, the state of the highways, have all tended to the development and popularity of the one-lunger type of car in France. Conditions are so different in America that doubtless the one-lunger will never attain the same importance as in France. It is nevertheless interesting to note what has been done by specialists on this side of the water.

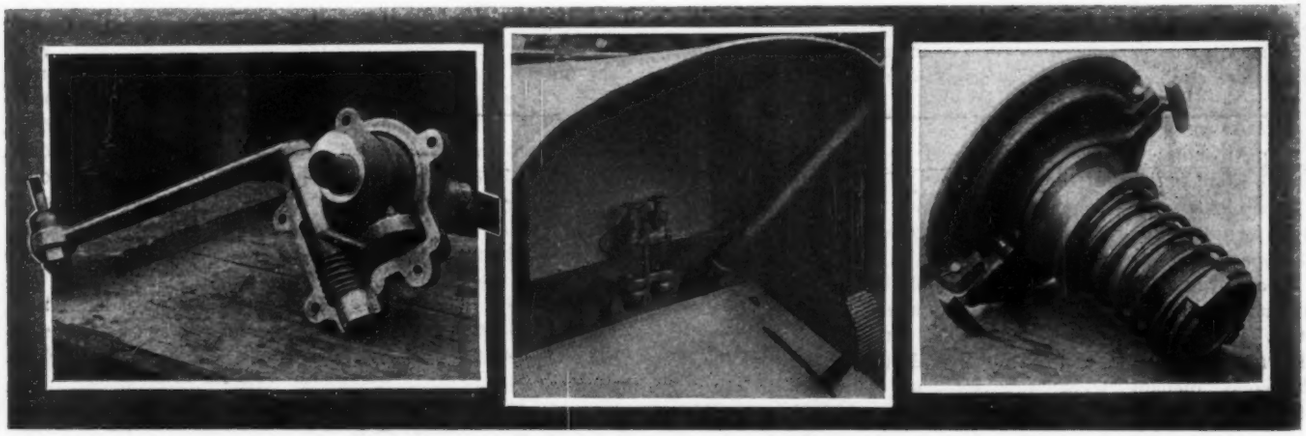
The first rule that was laid down was that the single-cylinder car must look like a four. This was not difficult to arrive at, and has been so generally copied that from an examination of the lines only it would be impossible to say whether the bonnet housed a one, two or four-cylinder engine. Frequently to aid in the deception without losing too much space the gasoline and lubricating oil tanks are fitted on the dash.

The next point was to make the engine so silent and easy running that it would be impossible for the ordinary man to declare how many cylinders were at work. This was a more difficult problem, as was shown by the fact that many a car from a good factory looked all right when it was motionless, but revealed its number of lungs as soon as the starting crank was pulled over. Such improvement has been made during the past year or two that there are now two or three makes of cars with only one cylinder that can be throttled down so low and made to turn so quietly that only an expert placed six feet away could certify to the number of cylinders. It is understood, of course, that the type of engine can be detected if it is raced, but it is a fact that if throttled down to run at the slowest speed such engines as the latest models of Sizaire-Naudin, De Dion and others that might be mentioned are not only so quiet that they cannot be heard a few feet away, but would put to shame some fours which would object to being called bad. On steady running, too, the difference between the one and the four has been made so slight as to be hardly noticeable; and it is only when it comes to varied work with much gear changing that the real inferiority is felt.

Taking the Sizaire-Naudin as one of the best examples in the one-lunger class, we find a vertical cylinder of 4 7-10 by 5 1-10 inches bore and stroke, with superimposed valves, the exhaust being operated from below and the intake from overhead. In accordance with modern practice, the valves have a large area even on the standard models, while on the semi-racing and full racing models it reaches the abnormal. There is nothing of special interest about the exhaust, but the operation of the intake, which is immediately above it, is of greater interest. The lift of the valve is varied by the displacement of a helicoidal cam, operated from the lever on the steering wheel. There is no control direct on the carbureter, the amount of lift of the valve of course regulating the amount of mixture that can be aspired. The rocker arm is a short lever with spherical ends, one of which fits onto the projecting stem of the inlet valve, while the other receives the end of the vertical push rod. It pivots on a crossbearing above its center, against which it is pushed by both the valve stem and the push rod. A wrench allows the entire valve-operating mechanism to be dismounted in a few seconds.

A light steel piston, with only two compression rings at the top and a guiding ring at the base, is employed. The piston is of more than usual length. Like the piston, the connecting rod is made as light as possible consistent with strength. Compression is high and very heavy internal and external flywheels are employed. The carbureter is placed very close to the cylinder walls—in fact almost touching them—in order to obtain all necessary heat without jacketing. It is an ordinary float feed type, with flow from the dashboard tank by gravity, and the air inlet at the base of a venturi tube, below the single jet nozzle. The tube mounts straight to the top of the cylinder, gradually widening as it mounts. The additional air inlet is almost direct over the inlet valve, the air being admitted through an automatic valve.

Water cooling is by thermo-syphon, the flow being through a plain copper tube radiator, with a large circular water tank immediately back of the head of the radiator. For the size of



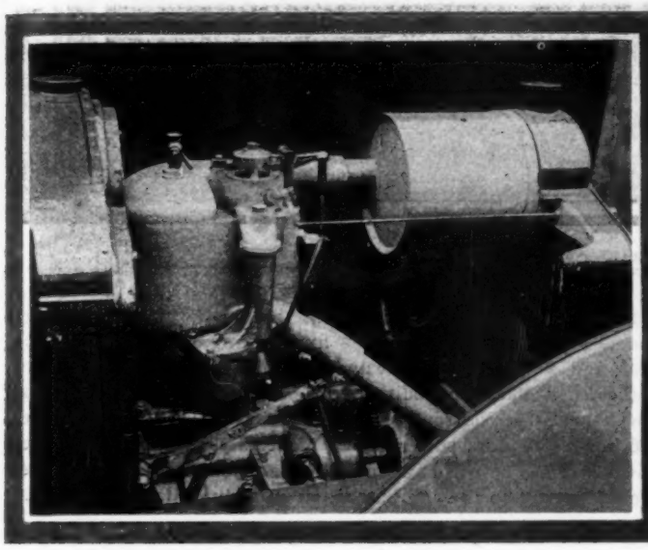
Unusually simple steering gear **Dashboard, lubricator, and single pedal** **Plate clutch and spring**

Some of the Mechanical Details of the Single-Cylinder 12-Horsepower Sizaire-Naudin Car, Shown in Title

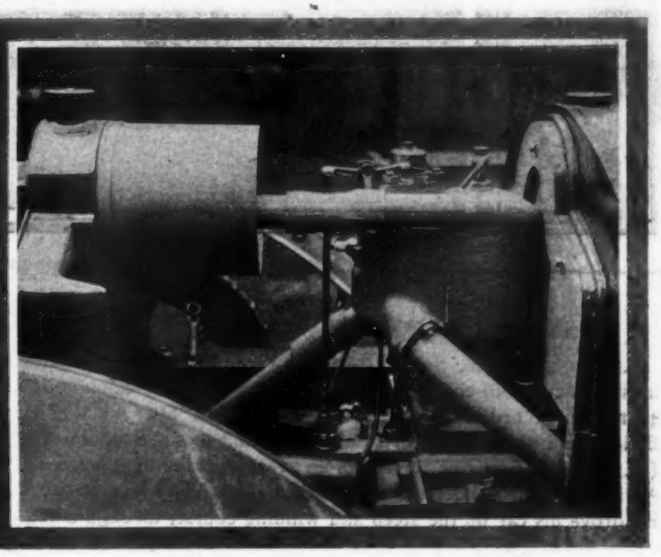
the motor the water pipes are of large diameter and are altogether devoid of bends, thus allowing a flow of water without any obstruction whatever. Ignition is by high-tension magneto with timing gears exposed. Provision is made for double ignition, but it is very rarely indeed that it is fitted. The exhaust port is of very large diameter, as is also the exhaust pipe. The use of a long and efficient type of muffler makes the exhaust absolutely noiseless. The absence of chug-chugging from the exhaust is somewhat remarkable, though there is nothing secret in the manner in which this silence is obtained, it being no more difficult to fit an efficient muffler on a one-lunger than on an eight-cylinder engine.

Lubrication for the motor is by splash, there being a couple of drips on the dash, one leading to the engine and the other to the rear axle. Some of the other features of the car are a transverse, inverted, semi-elliptic spring in front and shaft drive with differential and change speed mechanism combined in the rear axle, with direct drive on all three speeds.

A feature of unusual interest is presented in the steering gear. This consists of a coarse pitch worm of great depth, into which a hardened finger is set. When the worm is rotated in the usual manner, the finger is constrained to move, but being made a part of the steering shaft, must move in the arc of a circle.



Carbureter Side of Sizaire One-Cylinder Engine



Large Water Tank Is Hung on the Radiator

FRENCH COMPETITION FOR AERO MOTORS

PARIS, Sept. 25—The light-weight motor, developing great power and being absolutely regular in its running, being at present the greatest need in the aviation world, the Automobile Club of France announces another motor competition similar to the one held in its laboratory last spring.

Several lessons learned in the first event are being put to profit. Thus instead of a minimum and maximum horsepower being given, the weight of the motors only is limited. Under the old Gordon Bennett rules, when the chassis weight was fixed at 1,000 kilos it was found possible to increase the power from about 25 to 120; it is believed that by fixing a weight limit in the same way for engines the power developed can be increased considerably.

The weight limit is 330 pounds per motor, complete with everything necessary for running. Fuel allowance is 13 ounces of gasoline and 2 ounces of lubricating oil per horsepower-hour. If this amount is exceeded the weight of the excess will be added to the total weight of the motor; if the consumption is less than this the weight of the difference will be deducted from the weight of the engine. A three hours' test will be made under full load. No engine can be classed which weighs more than 8 4-5 pounds per horsepower.

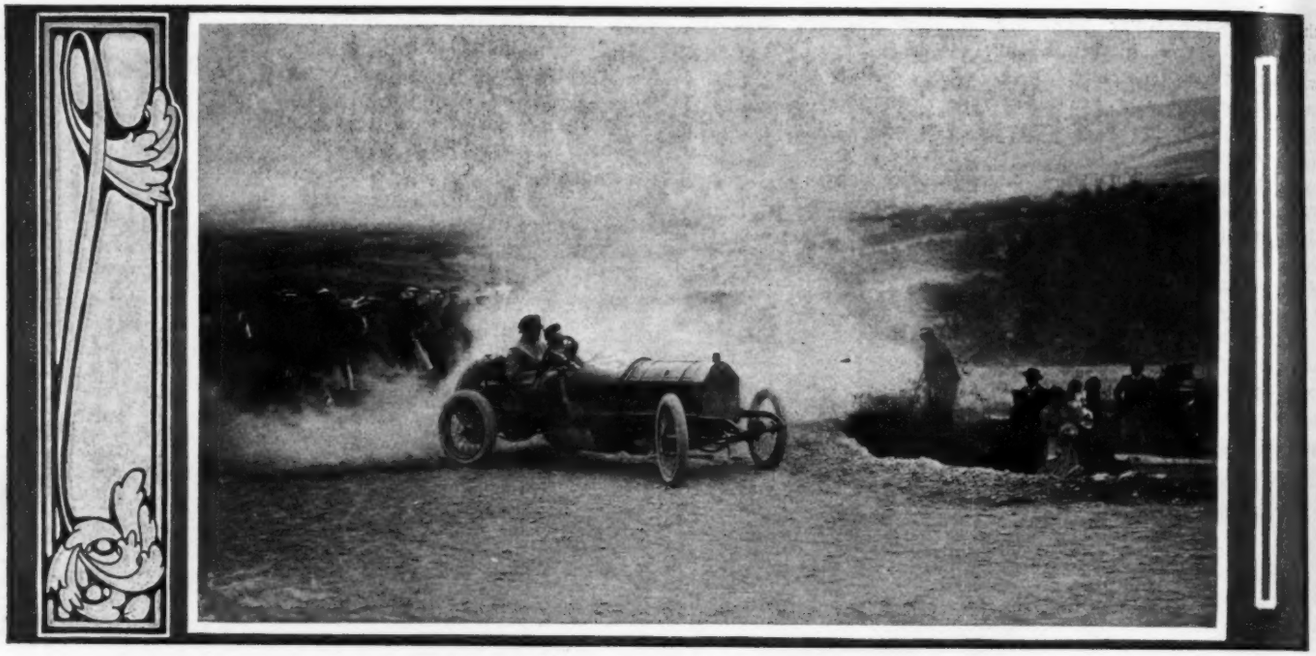
It will be endeavored to make the conditions of the test approximate as near as possible those under which an engine has to work when on an aeroplane. Thus, an air-cooled motor benefiting by a blast of air from the propeller when on a flying machine, will be allowed to use a fan, the weight of which will not be taken; the power necessary to drive the fan will be added to the effective power of the engine.

Considering the disadvantages under which water-cooled engines are placed during a bench test, a radiator, water tank and fan will not be weighed. All piping, as well as the water pump will be included in the weight of the motor. In place of the ignored cooling organs each motor will have to bear a supplement in the shape of 11-10 pounds per horsepower, according to the average power developed during the three hours' test. Piping will be fitted to carry the exhaust out of the testing room, but will not be included in the weight of the engine.

Since the last motor test the suggestion has been made that the engines should be mounted on a spring base. It is considered, however, that as the framework of an aeroplane has very little elasticity, this should not be allowed. The suggestion has also been made that the engine should be mounted on an aeroplane, but this has also been rejected on the ground that the aeroplane attached to the floor or a bench in the testing room would not be in the same conditions as when in the air. The flexibility of the frame, in addition, might cause the breakage of the crankshaft or the rupture of the universal joint between the engine and the brake.

The tests will be held during the month of December at the Automobile Club laboratory, near Paris. Entries are received at the rate of $20 per motor. Out of the subvention offered by the Minister of Public Works a prize of $200 and two prizes of $100 each are offered.

Entries for the light-weight motor competition are not likely to be lacking, for there are at least a score of firms that have studied this problem. Brasier, admitted one of the finest motor designers in France, has a four-cylinder aero motor ready to put on the market; Bayard-Clement has a new light-weight six; Gabriel Voisin has just designed a simple light-weight four; Buchet has produced a six; Renault, in addition to the eight-cylinder air-cooled model has an interesting four for aeroplane work, and Anzani has a new four with the cylinders placed in V. These are all engines that have not yet been fitted to any aeroplane. The number of those in daily use for flying machines is very much greater.



One of the Difficult and Trying Turns in the 13½-Mile Course Up Mont Ventoux

HISTORIC CLIMB OF MONT VENTOUX

AVIGNON, FRANCE, Sept. 24—Mont Ventoux, the longest and most difficult hill-climbing course in Europe, was again conquered in record-breaking time. Between the little village of Bedoin and the observatory on the summit lie 21.8 kilometers (13.5 miles) of narrow road with an average grade of 9 per cent. As in last year's meet the hero was Bablot, driving a Brasier. He drove his car up the steep and winding course, through a fog which made it impossible to see twenty yards ahead, in the remarkable time of 18:41. Bablot had the advantage of an intimate knowledge of the course, and without goggles, he took the dangerous turns at full speed. Pierron with the Motobloc took second in the same class with the time of 19:42, feeling the handicap of the fog much more than his speedy rival. Lochner with an Opel, Tangazzi with a Lancia and Ceirano with a Scat each won their respective classes. The voiturette trials on the first day resulted in a double victory for the Hispano-Suiza, a Spanish car, and Bablot also scored with a small Brasier. It is noteworthy that both this year and last Bablot succeeded in breaking the record in spite of unfavorable weather conditions, and the French sportsmen are eagerly looking forward to next year in hope that, at last, he will be able to show his best speed.

FRANCE MAY BECOME PARSIMONIOUS

PARIS, Sept. 24—Automobile tourists to France, who have run over the sandpapered roads of the republic and left a fertile stream of dollars at hotels and holiday resorts, without ever being called upon to pay for the use of the highways, are now about to learn that there is a revenue officer in this land of travel. Next year's budget proposals provide for the taxation of automobiles brought into France for temporary use. It is not decided what the tax will be, the official statement being that it shall be in proportion to the length of stay, and on the same ratio as is paid by home cars. The proposal is not received with anything like joy, even by the natives, for though the foreign visitors may do a little to scratch the fine surface off the roads, it is calculated that the money they bring in is worth far more than the damage they do.

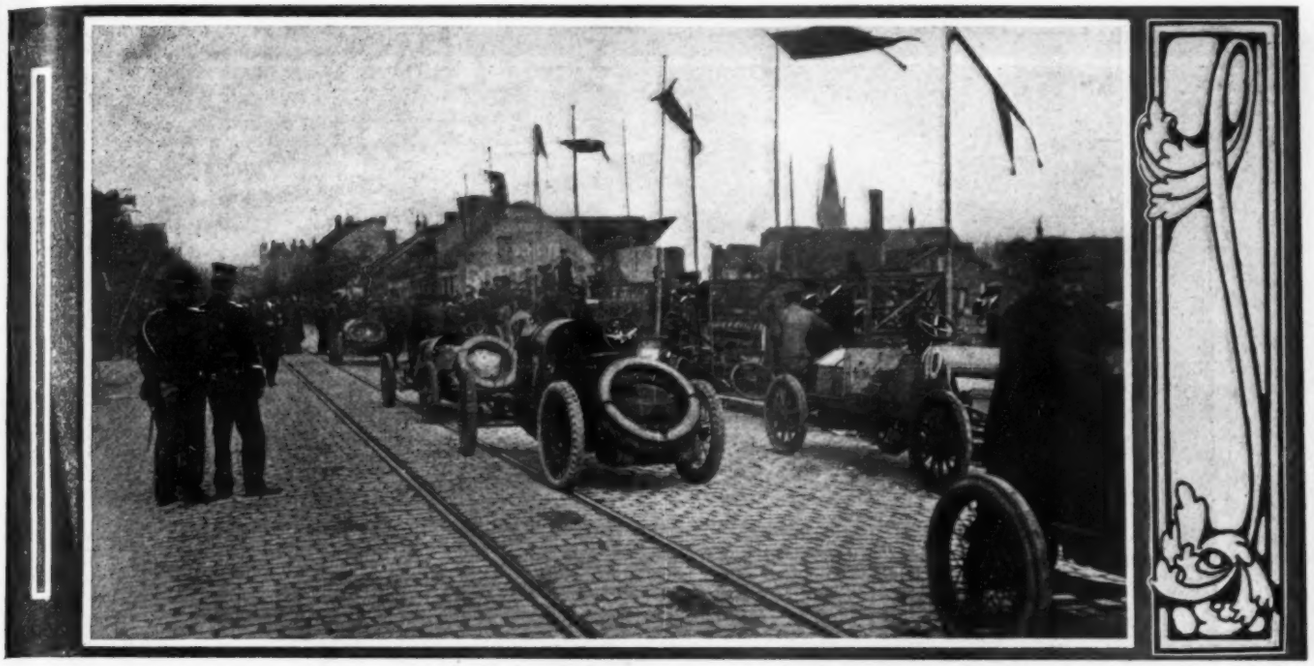
But the home autoist has not escaped attention. If he is the possessor of a car modestly rated at less than 10-horsepower he will not be called upon to open his purse strings any wider. If he has a more powerful vehicle the increase may be as high as 42 per cent. He must pay a fixed tax of $8 for a two-seated car and $15 for a four-seated vehicle, if he habits any town other than Paris, in addition to a tax per horsepower increasing from $1 per horsepower up to 10 horsepower until it reaches $6 for every horsepower above the eighty-first. If the owner lives in Paris he will have the pleasure of contributing an almost equal amount to the city authorities in addition to his State tax.

LONDON POLICE REGULATE MOTORBUSES

LONDON, Sept. 25—The new police regulations for motorbuses show several important changes, especially in limitations of weight and speed, tire section, etc. The maximum weight unloaded is specified at 3½ tons, with an option of 6 tons loaded, in which case 4 tons must be on the rear axle and 2 tons on the front axle. The maximum number of passengers is 16 inside and 18 outside, and in estimating loaded weight 140 pounds must be allowed for each passenger, as well as the driver and conductor. The total length of the vehicle must not exceed 23 feet, nor its breadth 7 feet 2 inches; the clearance between the front and rear axles must be a minimum of 10 inches loaded. Tires must be of resilient material. All 'buses must be so geared that their maximum speed shall not be greater than 12 miles an hour, or else be fitted with a device to give an audible warning as long as that rate of speed is exceeded.

MAINTENANCE COST OF LONDON TAXICABS

Figures showing the number and cost of replacements on the taxicabs in use in London have been collected by *Motor Traction*, an English magazine principally devoted to commercial vehicles. The most valuable are those pertaining to the 10-12-horsepower two-cylinder Unic cabs, which have been in use for three years. That part of the mechanism of these cabs which wears out first is the second speed countershaft gear. This must be renewed after 10,000 miles, at a cost of $9. The sliding member of the change-gear lasts from eighteen months to two years; it costs $24, with its two pinions. The bevel driving pinion lasts 18,000 miles, and entails an expense of $10 for renewal. All the other gear wheels of the cabs were in good condition, without having been renewed, after three years' running. The total expense for replacements averaged $.003 per mile.



Contenders on the Course at Ostend, Where the Little Cars Provided an Exciting and Fast Race

FRENCH VOITURETTES RACE AT OSTEND

OSTEND, BELGIUM, Sept. 18—The Coupe des Voiturettes, the only road race held this year, proved a complete success, and the absence of the big racers was scarcely noticed. In fact, the little cars are as fast as the big ones were two years ago, as everyone had to admit when Collomb made the fastest lap at the rate of 62 miles an hour. Lion-Peugeot added another to its long string of victories by taking first place. Giuppone was the winning pilot. Thomas, on the Le Gui, took second, being the only other contestant to finish the 248.6 miles called for. Collomb on the Corre-La Licorne took the lead from Giuppone on the third lap and held it till the sixth, when his car overturned. All contestants except Giuppone and Thomas dropped out before the tenth lap. Lormelle, driving a two-cycle Darras, was one of the last to quit, his trouble being a broken wheel. Giuppone's time was 4:33:28, an average of 54.4 miles an hour. The other two Lion-Peugeots had trouble early; Boillot cracked a cylinder and Goux burst a tire after he had used up all his spares. The race was characterized by the usual good management and was a great success as a sporting event.

EX-CHAIRMAN THOMPSON IN GERMANY

Jefferson de Mont Thompson, ex-chairman of the A. A. A. racing board and Vanderbilt cup commission, has been spending most of his summer in German touring. In the course of a long article, the Dresden *Daily Gazette* quotes Mr. Thompson on the Long Island Motor Parkway, and then continues:

Mr. Thompson for the past three years has almost continually been touring Europe en automobile, inspecting road conditions and other matters of interest to automobilists. His judgment on the Saxon roads will be read with pleasure, coming as it does from such a source. "I find the Saxon roads," he informed us, "by far the best in Germany, if not in all Europe. The materials to hand in this country are particularly adapted to road-making requirements, and the yellowish gravel used in Saxony is now recognized as the best material known to exist. I have been profoundly impressed by the superb engineering that is everywhere visible as I motor through Saxony, up finely graded hills and over perfectly smooth mountain roads."

Mr. Thompson also had many pleasant things to say of the courtesy and consideration which he invariably meets with now at the hands of German customs officials and other frontier officers. Up to eight or nine years ago, he said, conditions were very different, and an American tourist entered Germany in some trepidation. Now he comes in the full conviction that he is welcome, and as a consequence American tourist traffic, particularly en automobile, is almost doubling every year. "I always recommend the German tour to my American friends," continued our informant, "and I frequently meet over here acquaintances whom I previously advised to give the Fatherland a trial. I like to advertise the qualities of Germany everywhere I go because I get along so extremely well with the German people and German customs."

Mr. Thompson is one of the founders of the Aero Club of America and is a delegate to the aeronautical international convention to be held in Italy during next October. "We in America," he said, "are greatly interested in aviation, and at present there are six members of our club who fly at least as well as the brothers Wright."

In conclusion Mr. Thompson told our representative that this is his eleventh summer as an automobile tourist in Europe, and, "although I fear you will hardly believe me, I have never had an accident of any kind."

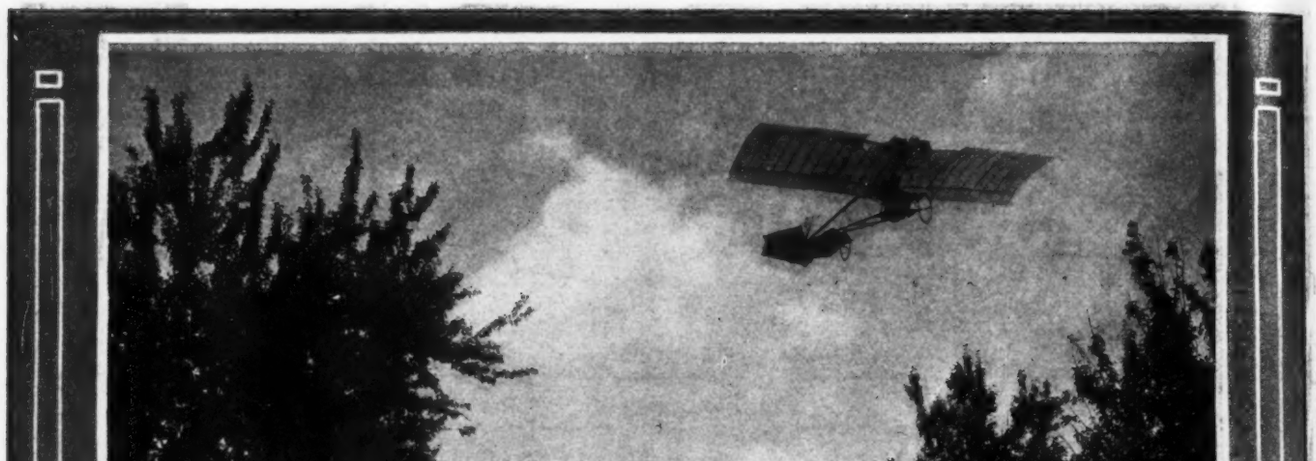
According to another paragraph in the Dresden paper, Mr. and Mrs. Thompson were entertained by Consul-General T. St. John Gaffney and Mrs. Gaffney, who afterwards accompanied them on an automobile trip through Saxon Switzerland.

WHY MADRID IS DISCARDING AUTOS

Vice-Consul Maddin Summers, of Madrid, furnishes the following information concerning the use of automobiles and carriages in the capital of Spain:

For the last four or five years the use of automobiles in Madrid has almost overshadowed the carriage trade. Autos became fashionable, both for excursion purposes and for use in the city. It was argued that their running expenses would be less than the maintenance of horses and carriages. This, however, has proved a mistake, as far as Madrid is concerned, as repairs and separate pieces are very expensive, owing to high duties, freight, commission, transportation, etc., very much the greater number of the machines being of foreign manufacture. Then the price of gasoline is double what it is in France. The consequence is an automobile crisis, and many persons are selling their machines very cheaply to get rid of them, while the carriage and horse trade, on the other hand, is looking up.

There are practically no American automobiles and few carriages in Madrid, for the reason that intending buyers want to see the machine or carriage before purchasing, so that they may know exactly what they are buying. The principal foreign automobile manufacturers have branch houses here, with machines to show interested persons. They also have on hand the repair parts, etc., so that the purchaser knows what he is buying.



Santos-Dumont in His Record-Breaking Flight at St. Cyr, France, Making Speed of 56 Miles per Hour

SPEED RECORDS ANNIHILATED BY SANTOS-DUMONT IN FRANCE

PARIS, Sept. 25—Maurice Guffroy and his attendant mechanics were working in their aeroplane shed by the side of the "Salt Hole," a few miles out of Versailles, when the noise of an open exhaust attracted their attention. The sound did not come from the highway, which runs by the shed, but was furnished by a motor up aloft and advancing rapidly over the plateau. A few minutes later and the aeroplane had settled down, Santos-Dumont had stepped out and Guffroy had lost his bet.

A few months ago, Guffroy, the Rep pilot, and Santos-Dumont, the steersman of his own aeroplanes, each built sheds twenty miles to the west of Paris, Santos-Dumont selecting a spot in the valley near the town of St. Cyr, and the Rep pilot pitching on a plateau six miles away. Santos-Dumont made a bet that he would pay a visit to Guffroy in his aeroplane.

Messrs. Santos-Dumont, Darracq and Ribbeyrolles

Months passed and the affair seemed to be forgotten, for the diminutive Santos-Dumont flyer had given but indifferent results at the trials. Then a new motor was procured—a simple two-cylinder, horizontal, developing 30 horsepower and weighing 110 pounds—which was found to be so satisfactory that after one preliminary trial the aeroplane was steered direct for the Salt Hole. six miles away, high up on the hill.

Santos-Dumont rose after running less than thirty yards on the ground, and with a favoring breeze behind traveled at the rate of more than fifty miles an hour. He had to rise high, almost two hundred feet above the ground, in order to clear the telegraph wires and tall trees. Seven minutes later he had settled down without breaking a spar, having accomplished a high speed cross-country flight with the smallest aeroplane in existence.

The Santos-Dumont monoplane is only 20 feet from tip to tip, compared with almost twice that area on the majority of monoplanes. It has a light bamboo backbone, at the extremity of which is a tail and the rear rudders, and has the general appearance of a large dragon fly. The motor is a two-cylinder opposed horizontal of 5.12 by 4.73 inches bore and stroke, without flywheel, and of very simple, even ordinary design. It is the first of this type that has been built at the Darracq factory, but has given such satisfaction that a series will be commenced.

While winning his bet with Maurice Guffroy, the Brazilian aviator won another with Henry Farman, who had declared that an aeroplane of such small dimensions would never be able to fly. It has not only flown, but proved itself very much faster than

any other machine in France. It is believed that an aeroplane of this type could be built for $1,000. Santos-Dumont declares that he has no intention of entering the business, but that anybody is at liberty to copy his design who desires to do so and build for themselves. He is satisfied to have created the "baby" type of aeroplane.

Santos-Dumont Also Gets a New Starting Record

Not satisfied with making a cross country trip of six miles on the smallest aeroplane in existence, Santos-Dumont returned from Buc to his shed at Saint-Cyr, landing within a few feet of his own doorway. After the trip out, the aeroplane passed the night in the Rep shed on the Buc plateau; the next afternoon the areoplane was brought out, the motor started and the home trip across the open fields, woods and streams was commenced. Seven minutes were occupied in making the journey, the increased length of time being accounted for by the presence of a brisk head wind.

The next exploit was to beat the starting record established by Glenn H. Curtiss in Italy. This Santos-Dumont succeeded in doing, getting into the air in 6 1-5 seconds, after a run of 229 feet on the ground. Curtiss had only been able to rise after 8 seconds, during which time he covered 246 feet before getting clear.

The attempt was disappointing to the aviator, for he had imagined that he could get away in half the distance necessary for the Curtiss machine, that is in a little over one hundred feet. Several attempts were made, one of them being on the highway, but it was not possible to get a shorter time than 6 1-5 seconds. It will be interesting now to watch the machine in a speed test round a course such as that at Rheims. It appears to be faster than either the Curtiss or the Bleriot flyers, but estimates even of experts are apt to be so far from the reality that an officially timed test should be made. The aeroplane, which is only 30 square feet in area, is fitted with a Darracq two-cylinder horizontal water-cooled motor, developing 30 horsepower for a weight of 110 pounds.

LATHAM FLIES ACROSS BERLIN

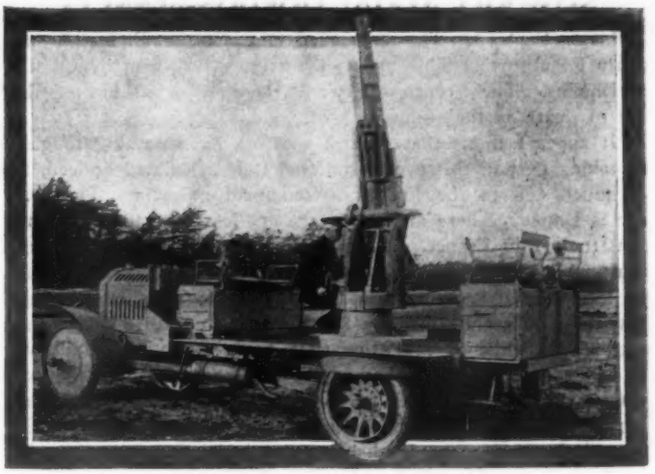
BERLIN, Sept. 27—Hubert Latham to-day made a brilliant flight across the city from the Tempelhof Field to the aviation field at Johannisthal. The distance travelled was about ten kilometers and the time seven minutes. The wind was favorable, and Latham soared for most of the distance at a height of 100 meters. His machine was an Antoinette monoplane.

The aviation meet here has been disappointing. Yesterday only the speed contest was begun, and none of the contestants covered the minimum distance of eight kilometers. Leblanc, on a Blériot monoplane, turned a somersault on alighting, but was not injured. To-day Henry Farman made eight rounds of the field, covering twenty kilometers in eleven minutes. Blériot made five rounds. Orville Wright is not participating, and his failure to appear has done much to spread the feeling that the meet was incomplete. The public turned out in large numbers to see the "bird-men" and was consequently greatly disappointed.

WRIGHT THREATENS FOREIGN AEROPLANES

Two aeroplanes arrived in New York last Sunday on the *Chicago*, and caused no little worry to the customs officials. One was the machine Curtiss used at Rheims, and the other the Farman biplane brought over by J. W. Curzon, of Jackson, Miss. Wilbur Wright has threatened to enter a suit against Mr. Curzon on the claim that the Farman machine infringes his patents. Mr. Wright also threatens a suit against Hayden Sands, of New York, who has purchased a Blériot machine, which is expected to arrive in a few weeks.

The owner of the latter, as well as the French builder have given expression to opinions to the effect that the Wright patents are worthless, and say that they will fight the case out to the limit. It promises to be a very hard fought case.



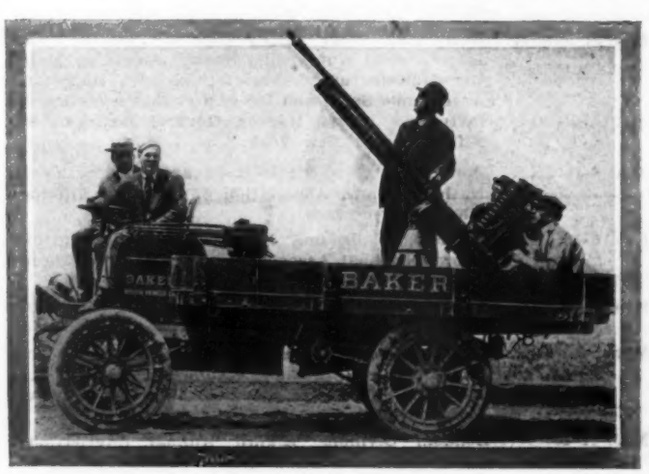
Krupp Gun Designed to Annihilate War Airships

GERMAN AUTOMOBILE AIRSHIP GUN

FRANKFORT, GERMANY, Sept. 27—The Krupp Company is exhibiting at the Frankfort Aeronautical Exposition an ingenious automobile gun for fighting airships. The chassis has a 50-horsepower motor which drives all four wheels, in order to maneuver more easily on rough ground and steep grades. The platform affords room for five men and sixty cartridges. The gun is mounted on a steel pedestal, and can be trained through an arc of 360 degrees horizontally and 180 degrees vertically. When it is to be fired the platform is secured by struts to take the shock off the frame and axles. The projectiles weigh 11 pounds each, and leave a trail of smoke in the air to assist the gunner in finding the range. The gun and car complete weighs 4315 kg. (9500 pounds). The maximum range horizontally is 9100 meters (5.64 miles), and vertically 6300 meters (3.9 miles).

CLEVELAND INVENTOR HAS BALLOON GUN

CLEVELAND, Sept. 27—Dr. S. W. McLean, of this city, has built an airship gun which has received some preliminary tests mounted on a Baker electric truck. The gun itself appears to be the usual naval type of semi-automatic, firing a six-pound shell. It is capable of delivering 200 shots per minute. The mounting has been altered to allow of a maximum elevation of about 45 degrees According to Dr. McLean, the difficulty is to devise a missile which will damage the airship, even if it does hit it. The ordinary shell will not explode under less resistance than that offered by a one-inch pine board. The idea of the new gun is to riddle the dirigible or aeroplane by a number of shells, not depending on their explosion. For this purpose mobility is the prime requisite.



American Weapon Built to Destroy Aerial Fighters

NOW KILL AERIAL GORDON-BENNETT

PARIS, Sept. 24—The cry, "Kill the Gordon-Bennett," has again gone forth. This means the trophy just won by Curtiss at Rheims. The French review, *L'Automobile*, has uttered the cry of death in the following note:

"It appears to us that French aviators have nothing to gain by taking part in this event, and that it is calculated, indeed, to do much evil to the French aeronautical industry. The reason is simple. There are at present not less than ten aeroplane constructors in France. What do we see abroad? Two Americans took part in the competition at Rheims and no other competitors existed anywhere. What is more extraordinary would have been to see Farman fly for England, for he is of English nationality, while at the same time being essentially Parisian. In any case he is a member of the French school, and in that respect as much French as Bleriot or Levasseur. Suppose Farman had won the Gordon-Bennett cup; every foreigner would have declared that the English aeronautical industry was at the head of the world and that the French product was inferior.

"America is the only country that can meet us in aeronautical matters. The Wrights have presented series of machines which class them among the best constructors. As to Curtiss, the winner of the cup, he has only one machine of this type. In France there are various constructors, among them Bleriot, Antoinette, Farman and Voisin, who are daily selling machines to the public. Elsewhere only the Wrights are in this position.

"Under these conditions we are playing the rôle of dupes in taking part in a competition in which equal importance is given to the industry of various nations. We are about to repeat in the aviation world what was done in the automobile world, where France played into the hands of the German, English and Italian industry, by putting on the same footing the fifty French factories and the rare foreign factories.

"The cup has been gained by a compatriot of the generous donator. It has gone to America. Let it stay there forever. It is to be hoped that our constructors will see the danger at once, and that they will inform the Aero Club that they have no further desire to take part in such an event."

Had Blériot, who placed such importance on the winning of the cup, been successful in his attempt, it is certain that such a wail would never have gone forth. This causes the whole affair to look very unsportsmanlike, because the French are losing.

THEORIES AS TO LEFEBVRE'S DEATH

PARIS, Sept. 24—Juvisy, the Paris suburban aerodrome, should provide a series of good races from October 3 to 17, if numbers of participants count for anything. The entry list has been closed with 34 names, many of which, it is true, are those of newcomers never having been aloft, but at the same time including a number of veterans. Among the important pilots are Hubert Latham, Leon Delagrange, Henry Fournier, Comte de Lambert, Jean Gobron, Louis Paulhan and Henri Rougier.

After an examination of the wreckage of the Wright biplane and a close inquiry into all the conditions, two theories are put forth regarding the unfortunate death of Eugene Lefèbvre, the Wright pilot. One is that the front elevation rudder controls either broke or jammed while the planes were in position for descending. The motor running and continuing to run, the fall of the apparatus took place at a terrific speed.

The other theory, put forth by the constructors, is that after the smash the controls were found to be bent, but were not broken. Thus the machine must have been overturned by a gust. At the moment the rudders were set for a downward sweep a gust of wind caught the machine from above. The apparatus quickly passed its central pivoting point, and nothing that the pilot could do could bring it back to an even keel within the thirty feet drop at his disposal. Had he been at a height of 100 feet it would have been possible to get on an even keel before striking the ground.

FRENCH DIRIGIBLE BURST IN FLIGHT

NEVERS, FRANCE, Sept. 25—The military dirigible *République* burst while in flight near here to-day. Four army officers, who formed its crew, were instantly killed. It is believed that the accident was due to the breaking of a propeller, the pieces of which ripped through the envelope. The torn remnants failed to form a parachute, as they often do in such cases, and the wreckage fell straight to the ground, a distance of 300 feet.

French Aviator Victim of Accident

BOULOGNE, FRANCE, Sept. 22—Captain Louis Ferber was killed at the end of a successful flight near here to-day. His machine was a Voisin biplane. In landing, one of the wings struck the ground and caused the machine to turn a somersault.

THE AUTOMOBILE CALENDAR

Shows, Meetings, Etc.

Nov. 6-13.....Atlanta, Ga., Auditorium-Armory, National Automobile Show, auspices of National Association of Automobile Manufacturers, Samuel A. Miles and Alfred Reeves, General Managers, 7 East 42d Street, New York City.

Dec. 31-Jan. 7....New York City, Grand Central Palace, Tenth International Automobile Show; American Motor Car Manufacturers' Association, with Importers' Automobile Salon and Motor and Accessory Manufacturers. Alfred Reeves, General Manager, 505 Fifth Avenue, New York.

Jan. 8-15.....New York City, Madison Square Garden, Tenth National Show, Association of Licensed Automobile Manufacturers.

Feb. 5-12.....Chicago, Coliseum, Ninth Annual Automobile Show, National Association of Automobile Manufacturers. S. A. Miles, General Manager.

Feb. 22-26.....Kansas City, Mo., Convention Hall, Fourth Annual Automobile Show.

March 5-12.....Boston, Mechanics' Building, Eighth Annual Automobile Show, Boston Automobile Dealers' Association. Chester I. Campbell, General Manager, 5 Park Square.

Nov. 12-20.....London, Olympia, Eighth Annual International Automobile Show, Society of Motor Manufacturers and Traders.

Races, Hill Climbs, Etc.

Oct. 5-9.....Danbury, Conn., Stock Car Races in Connection with Danbury Fair.

Oct. 8-9.....Louisville, Ky., Endurance Run, Louisville Automobile Club.

Oct. 7.....Philadelphia, Second Annual Stock Chassis, 200-Mile Race, Fairmount Park, Quaker City M. C.

Oct. 15.....New York City, Brighton Beach Track, 24-Hour Race (postponed from September 24), Motor Racing Association.

Oct. 16.....Denver, Col., Start of "Flag to Flag" Reliability Run, G. A. Wahlgreen, Manager.

Oct. 23.....San Francisco, Road Race, Automobile Club of California.

Oct. 28-30.....Dallas, Texas, Three-Day Track Meet, Dallas Automobile Club.

Oct. 30.....Vanderbilt Cup Race, Long Island Motor Parkway, Motor Cup Holding Company.

Nov. 8-9.....Savannah, Ga., Georgia Highway Reliability Contest to Atlanta, Savannah Automobile Club.

Nov. 9.....Atlanta, Ga., Track Races, Atlanta Automobile Association.

Nov. 20-21.....New Orleans, Annual Fall Meet, New Orleans Automobile Club. Homer C. George, Secretary-Manager.

Dec. 29-30.....Philadelphia, Fourth Annual Midwinter Endurance Contest, Quaker City Motor Club.

Feb. 4-6.....New Orleans, Annual Mardi Gras Speed Carnival, New Orleans Automobile Club.

What the Clubs Are Doing These Days

NEW CONNECTICUT LAW IS UNPOPULAR

NEW HAVEN, CONN., Sept. 27—The directors' meeting of the Connecticut Automobile Association last week made it apparent that the new automobile law does not meet with universal approval. C. M. Robinson, chairman of the legislative committee, made a report on the work with the last legislature. He said that it was the practice of the committee on roads of the legislature to agree to suggested measures and later to ignore the agreements and bring in a different report. "We could have obtained just as much by letting them go ahead and draw up any old bill they saw fit, instead of trying to be reasonable and meet them half way. The whole thing was run by politics." He strongly advocated that the association contest the new law on the ground of unconstitutionality. In this he was supported by Joseph P. Tuttle, the association's attorney.

In the general discussion which followed it was agreed that although the taxation was unjust, automobilists should be willing to contribute a reasonable amount since the money is to be devoted to road improvement. The general opinion seemed to be that 40 cents per horsepower was all right, but that making the rate 50 or 60 cents was "rubbing it in." In the absence of President Fuller, Vice-President Staples, of Bridgeport, presided.

HARTFORD CLUB IN NEW QUARTERS

HARTFORD, CONN., Sept. 27—The Automobile Club of Hartford is now located in its new home in the Allyn House Annex, 201 Trumbull street. At the recent house warming and formal opening nearly the entire membership attended, and Mayor Hooker, who is a prominent member, was present to carry out his part of the program. The rooms have been newly fitted up with mission furniture and with every facility to make it pleasant for members to drop in frequently. The hotel café connects with the club quarters, and the members can thus have the house service at any time. The list now has about 300 names of active participants.

Road maps, touring information, and a clerk to attend to the wishes of touring autoists in this particular, are important parts of the new programme of the club. Accurate touring directions may thus be obtained, and special care will be taken to keep posted on all road repair work, so that detours may be made, if necessary, en route.

JERSEYITES TO HAVE CLUBHOUSE

NEWARK, N. J., Sept. 25—The proposition of securing a club house came up for general discussion at the third dinner of the New Jersey Automobile and Motor Club last Wednesday evening, at the present quarters on Park place. The banquet was one of the most elaborate of the season, and more than fifty members were present. The club requires more room for social functions than is afforded at the present location, and it seemed that its interests would be best served by the change. The matter was finally decided favorably, and a new location will be secured.

SEA ISLE, N. J., HAS AN AUTOMOBILE CLUB

SEA ISLE CITY, N. J., Sept. 27—The Sea Isle City Motor Club has been permanently organized by the automobilists of this city. Over thirty members have already been enrolled, with prospects of securing eighty by the end of the season. The following officers have been elected: Charles Woertz, president; Bismarck Kiessewetter, vice-president; Walter Brooks, secretary and treasurer. A committee on constitution and bylaws was appointed, consisting of Messrs. Coyle, Beckett and Bell, and it was decided to apply to the A. A. A. for a charter.

PHILADELPHIA ROADS AND SIGNS IMPROVE

PHILADELPHIA, Sept. 27—The Philadelphia Automobile Club deserves the good-will of every automobilist who has used the roads in the vicinity of the Quaker City this summer. Apart from its signboarding work—which benefits everybody who travels the roads—and its maps and routes, the club has been getting down to the actual work of putting the roads in shape, or at least of providing the means therefor. There was one bad stretch in particular on the New York-Philadelphia route which no one seemed in any hurry to improve. The club bought a King split-log drag and so interested the turnpike company that it put a top dressing of stone on the bad stretch and ironed it out with a steam roller. The method of the chairman of the club's good roads committee is to take the road supervisors out in his car and show them just where the roads ought to be improved, and it is working to perfection. The authorities get busy immediately after this ocular demonstration, and the result has been the elimination of any number of bad spots on the turnpikes leading into the city.

BALTIMOREANS TO CONFER WITH LAWMAKERS

BALTIMORE, Sept. 27—Members of the Automobile Club of Maryland are anxious to have an amicable agreement with the Automobile Commission in regard to the proposed bill which the commission will present to the General Assembly next January. It has been decided to invite Governor Crothers, Mayor Mahool of Baltimore, the Baltimore County Commissioners and the members of the Automobile Commission to attend a special meeting of the club within the next few weeks. The club members wish to have some agreement reached regarding the special tax and a more liberal speed limit than the present 12-mile one.

Osborne I. Yellott was appointed to head a committee to cooperate with the Baltimore County Commissioners for the placing of road signs about the state. It was also decided to have the club publish a road map for tourists.

NATIONAL SIGNPOSTING DAY SUGGESTED

COLUMBUS, O., Sept. 27—Members of the Columbus Automobile Club are enthusing over the prospects for the establishment of a national signposting day. The club has been very active in this particular during the present season, and appreciates the value of a plan along more extended and uniform lines. Many of the members have offered to assist in erecting guides on all the roads of the central part of the State. A nuisance which will be fought is that of vandals who destroy the automobile club posters, and it is probable that an effort will be made to have the Legislature constitute this a misdemeanor, with suitable punishment. This is a despicable trick and the club is being commended on every side for the firm stand which it has taken, even by people who do not drive an automobile.

COLUMBUS, O., PLANS "OLD PEOPLE'S DAY"

COLUMBUS, O., Sept. 27—"I am over 70 years old and I have never ridden in an automobile," said an aged man in front of a Columbus business house recently. W. E. Heskett, a member of the Columbus Automobile Club, heard the statement and immediately got busy. After conferring with the officers of the club a movement was started for an "old peoples' day," similar to orphans' day. It is proposed to give all old people over threescore and ten a long automobile ride and entertain them at the clubhouse some time in October. The movement is finding support on all sides and already many members of the club have volunteered the use of their cars.

THE AUTOMOBILE

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WHAT SHALL THE MATERIALS BE?

Following the establishment and fitting out of many and very complete laboratories comes the natural sequence, the results obtained therein. These take divers forms, some following along and amplifying present and past knowledge, others simply bearing out what has been said in previous years before complete testing equipments were available, and on the whole adding nothing to our knowledge. Then there is a third class of results, which have had a startling effect. These are the tests which have upset previous theories in many cases.

In cases of this sort there remains much work for the laboratory to do in the way of repeating the proof, and verifying it, until the newer idea has been placed upon a firm footing. In the line of materials there has been much room for this sort of thing, and the forehanded manufacturer has gained not a little by the work of his chemists and testers.

As noteworthy of the whole range of special metals, for which it may be said that the automobile has developed them, is the ultra-lightweight metal, aluminum. When first brought out, this was hailed as the successor of cast iron, and in some cases of steel and malleable iron, for motor car use. Time proved that the strength was lacking for the two latter uses, although it persisted as a substitute for the first named. Now, it would appear as if the growing feeling that it was too treacherous a metal to use has been proved by modern laboratory tests. Coupled with the tendency to lower prices for cars, and the still later medium-priced car, it appears as if the metal for automobile use is on the downward path.

Any mention of the price of the latter-day cars, in particular the very low-priced runabouts, shows that the metal is, there at least, out of place. To put it otherwise, what place has 60-cent-a-pound metal, and unreliable at that, in a car listing at $950?

STATUS OF SPEED CONTESTS

The year has been remarkable for the number of racing events which have taken place in this country. No less than four road races of national importance have been run or are scheduled, besides many local ones. One large automobile track has been opened, and another will open within six weeks. In addition, there have been about the usual number of races on mile tracks, in spite of the agitation against this form of the sport.

Several conclusions may be drawn from this unexpected abundance of speed contests. First, that automobile racing has a firm hold on the great mass of the people, the class whose support is necessary to the success of such costly enterprises as have recently been undertaken. Second, that the races are now on a commercial basis. The good of the industry has ceased to be the consideration. Much as we may regret the passing of the picturesque old days, it cannot be helped. Perhaps the reason is that the industry is too big to be coddled.

PROGRESS CLAIMS ITS VICTIMS

The progress of the sciences of aviation and aerostation has claimed, during the past month, the sacrifice of six human lives. To the names of Lilienthal and Selfridge must now be added those of Etienne Lefèbvre, Captain Ferber, Captain Marchal, Lieutenant Phaure and Sub-Lieutenants Vincenot and Reux. Such wonderful advances have been made this summer in the practice of these sciences that the worst danger seemed past. We now realize how scant is our knowledge, in comparison with that which is yet to be learned.

The lessons which misfortune can teach should not, however, be neglected. These accidents have discredited two theories which formerly were widely believed. It had been contended that, if the envelope of a dirigible should be punctured, allowing the gas to escape, that the envelope would still act as a parachute to retard the descent. This has happened several times in the case of spherical balloons, but the disaster to the *République* shows that dirigibles do not act in the same manner. On the other hand, there have always been dire prophecies of the danger of an aeroplane's motor stopping in mid-air. Several such incidents have now demonstrated that no consequences need be feared in such cases except the curtailment of the flight. The accidents to both M. Lefèbvre and Captain Ferber took place with the motor running and the machine flying low. On the whole, we think that the advantage has been with the aeroplanes. Just what the future will bring forth to prove or disprove the worth of either form remains to be seen. From the viewpoint of the present day status of the two, the balance seems to favor the birdlike form.

ACCESSORY ALLOTMENTS FOR ATLANTA SHOW

ATLANTA, GA., Sept. 27—Forty members of the Motor and Accessory Manufacturers' Association have taken space at the Atlanta automobile show, which is to open November 6, and practically all the leading parts and accessories makers in the country are included in the list. The allotment of space among the members of the association was completed Monday by the show committee of the M. and A. M. and contracts are now being mailed. More than 7,000 square feet of space has been disposed of in this distribution.

One of the features of the show, according to the latest reports, is to be a collection of oil paintings illustrating automobile scenes. These paintings, the work of well known artists, will be 8 by 24 feet in size, and a score of them will be used as decorations around the elevated platforms. The use of such paintings shows the pains taken to make the show a success.

The following is a list of the members of the M. and A. M. A., who will be represented at the show:

Ajax-Grieb Rubber Co.
Badger Brass Mfg. Co.
S. F. Bowser & Co.
Byrne, Kingston & Co.
Conn. Telephone & Electric Co.
Diamond Rubber Co.
Jos. Dixon Crucible Co.
Dow Tire Co.
Electric Storage Battery Co.
Empire Tire Co.
Federal Rubber Co.
Firestone Tire & Rubber Co.
Fisk Rubber Co.
G & J Tire Co.
B. F. Goodrich Co.
Gabriel Horn Mfg. Co.
Goodyear Tire & Rubber Co.
A. W. Harris Oil Co.
Hartford Rubber Works Co.
Herz & Co.
Kokomo Electric Co.
Jones Speedometer Co.
Leather Tire Goods Co.
C. A. Metzger Co.
Michelin Tire Co.
Morgan & Wright.
National Carbon Co.
Never-Miss Spark Plug Co.
N. Y. & N. J. Lubricant Co.
Oliver Mfg. Co.
Randall-Faichney Co.
Republic Rubber Co.
C. A. Shaler Co.
Stromberg Motor Devices Co.
High Wheel Auto Parts Co.
C. F. Splitdorf.
Sprague Umbrella Co.
Veeder Mfg. Co.
Weed Chain Tire Grip Co.
Hartford Suspension Co.

TIRE PRICES ARE AGAIN INCREASED

AKRON, O., Sept. 27—The increased price of crude rubber is alarming tire manufacturers. The Goodyear Tire & Rubber Company has announced an increase of 15 per cent. in the price of its finished tires, and similar announcements are expected from the Goodrich, Diamond and other companies, in addition to the increases made several months ago. The best grade of crude rubber was quoted last week at $2.10 per pound, and rubber men say that tires now cost to make 25 to 30 per cent. more than a year ago. The only hope the manufacturers see of checking the steady rise is that the cultivation of rubber will be made practicable, and all attempts to do this so far have been in vain.

Sixty branch managers and tire salesmen of the B. F. Goodrich Company were here for two days last week, and were in conference with the officers of the company. Among those present was A. E. Lumsden, the European manager, who makes his headquarters at London.

"AROUND LONG ISLAND" POSTPONED

The New York Automobile Trade Association has thought it advisable to postpone the "Around Long Island" tour, originally scheduled for September 28 to 30, to a later date, because of conflict with the Hudson-Fulton celebration. The members of the association, while ostensibly enthusiastic over the prospects of the tour, had developed an embarrassing unwillingness to absent themselves from the metropolis on those three days. In addition, the sanction from the contest board of the A. A. A. was not forthcoming, as expected, because several features of the A. A. A. rules had not been embodied in the Trade Association regulations. The delay will give time for the adjustment of this matter, and will also allow the members of the association to take part in the general festivities.

While the postponement has caused much disappointment, it is in line with many other similar changes of dates caused by the celebration.

DO WOMEN MAKE SAFE AUTO DRIVERS?

MILWAUKEE, WIS., Sept. 27—There has been some agitation in this city toward prohibiting the operation of automobiles by women in the downtown district, but the council probably will not take any notice of the matter. A majority of automobilists oppose such action, reasoning that women make better drivers than men; that they do not take chances, are the least reckless, and maintain the speed limits more conscientiously than men. No cases are on record in Milwaukee of accidents to cars operated by women. In view of these facts, it is likely that the agitation will be short-lived.

EXPORT TRADE DISCUSSED BY COUZENS

"No American maker should look for foreign trade with the idea that it is to be obtained easily," said James Couzens, of the Ford Motor Company, when he landed from the *Caronia* after a six weeks' trip through England, France, Germany and Switzerland. "There is an opportunity abroad to sell a great many American cars, and the field is constantly enlarging. In order to obtain the business, however, European conditions must be carefully studied." According to Mr. Couzens, 115 Ford cars were sold in France this year, and the French agent, Henry De Passe, has ordered 300 for 1910. A branch has been established in London at 55 Shrewsbury avenue. The French are expecting great things of the new car manufactured by the Darracq Company, a 20-horsepower four-cylinder machine to sell at $1,000.

VANDERBILT CUP ENTRY BLANKS OUT

With the receipt of word from Buffalo recently, to the effect that Chairman F. B. Hower had granted a sanction for the Vanderbilt cup race, on Long Island, Oct. 30, the last obstacle has been removed. The Motor Cups Holding Company immediately opened offices in the Long Acre Building, at Seventh avenue and Forty-third street, from where entry blanks have been issued.

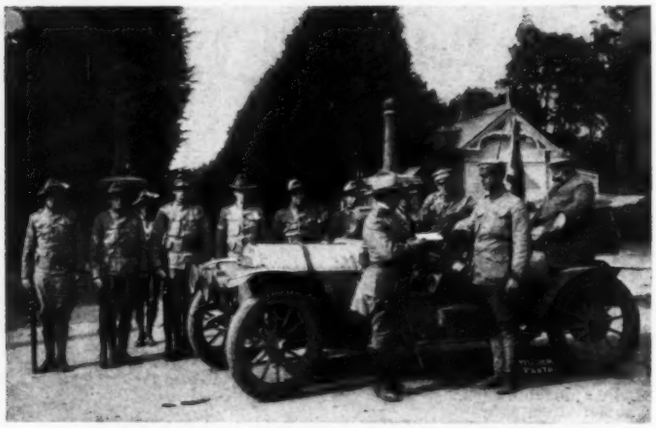
Boxes and seats in the grandstand have also been placed on sale at the offices, and so great has been the interest displayed to date, that the offices will be kept open nights. Enough entries have been already made or promised to insure a good, fast race.

N. A. A. M. STARTS TRAFFIC DEPARTMENT

Information on any matter pertaining to the shipment of automobiles can be obtained from the traffic department of the National Association of Automobile Manufacturers, 7 East 42d street, New York. In order to give dealers the fullest benefit of its work, the executive committee of the association has notified them to this effect. The service of the traffic department will include advice as to correct freight rates, and the collection, without charge, of claims against railroads for overcharge, or for loss or damage.

OHIO LICENSING SEEMS PROFITABLE

COLUMBUS, O., Sept. 27—The report of State Registrar of Automobiles Caley for the month ending September 15, indicates an increase in the number of automobiles registered and also the usual number of renewals. Owners have registered new cars to the number of 603, bringing in a revenue of $5,277. Manufacturers and dealers to the number of 20 paid license fees of $1 each, and 225 chauffeurs were registered. The total revenue of the department for the month was $8,192.



Arrival of Mitchell Transcontinental at San Francisco

Presenting Major-General Wood's Despatch to Major-General Weston at Pacific Coast U. S. Army Headquarters, Presidio.

GOOD ROADS HELP SALE OF AUTOS

CLEVELAND, Sept. 13—"Millions for good roads" is the slogan of the middle West and the further West, according to O. B. Henderson, sales manager of the Baker Motor Vehicle Company, who has just completed a tour of that part of the country. For two months he was visiting the sections where the automobile business is rapidly increasing, and he says: "The good road ideas are spreading remarkably. One county in California, alone, has appropriated a million dollars; Seattle is cutting down its hills; cities are constructing boulevards; States are pushing out splendid highways, and improvement is evident everywhere. It is a prophecy which the wise dealers are heeding, and modern, substantial buildings are going up in many places. Foresighted business men are securing the agencies for well-established automobiles, and all of this is caused by the growing demand for better roads.

"I find the sale of electric vehicles increasing immensely, for years of steady growth have been followed by a sudden desire for this type of automobile. I found electrics in many places where a year ago there were none. City men are realizing the field which these cars have that in no way conflicts with the one of the gasoline cars, especially for family use or when women wish to operate their own machines. The most remarkable development is the introduction of the gasoline automobile in the farm life of the middle section. Farmers do their traveling in this way and this will be a bonanza year for automobiles.

MINNEAPOLIS AUTO MAKERS ENLARGE

MINNEAPOLIS, MINN., Sept. 25—The continual growth of the automobile industry in the Northwest is becoming noticeable in many directions. The retail trade has increased by leaps and bounds and now comes the anouncement of interesting doings by the manufacturers of this district. This city will become an important factor in the automobile and truck manufacturing lines, for the local concerns engaged in this work have recently been reorganized to handle a much increased amount of business. Between 3,200 and 3,500 machines will be turned out during the coming season.

The Wilcox Motor Car Company has been put upon a million-dollar basis and is arranging to construct 3,000 touring cars and about 100 trucks. P. W. Strong, for many years the sales manager of the Welch Company at Pontiac, Mich., has been secured to handle the pleasure car end of the business, and John H. Shields, the present sales manager, will take care of the commercial department. The president of the new concern is Harry E. Wilcox, the man who has been most influential during the past three years in bringing success to the company. C. H. Davidson, of Carrington, N. D., and John F. Wilcox, of this city, are principal financial backers of the Wilcox Company. It is the impression that a car which will sell for about $1,500 will be produced, following in a general way the design of the former Wilcox cars. It will have 16 inches road clearance and double side-chains.

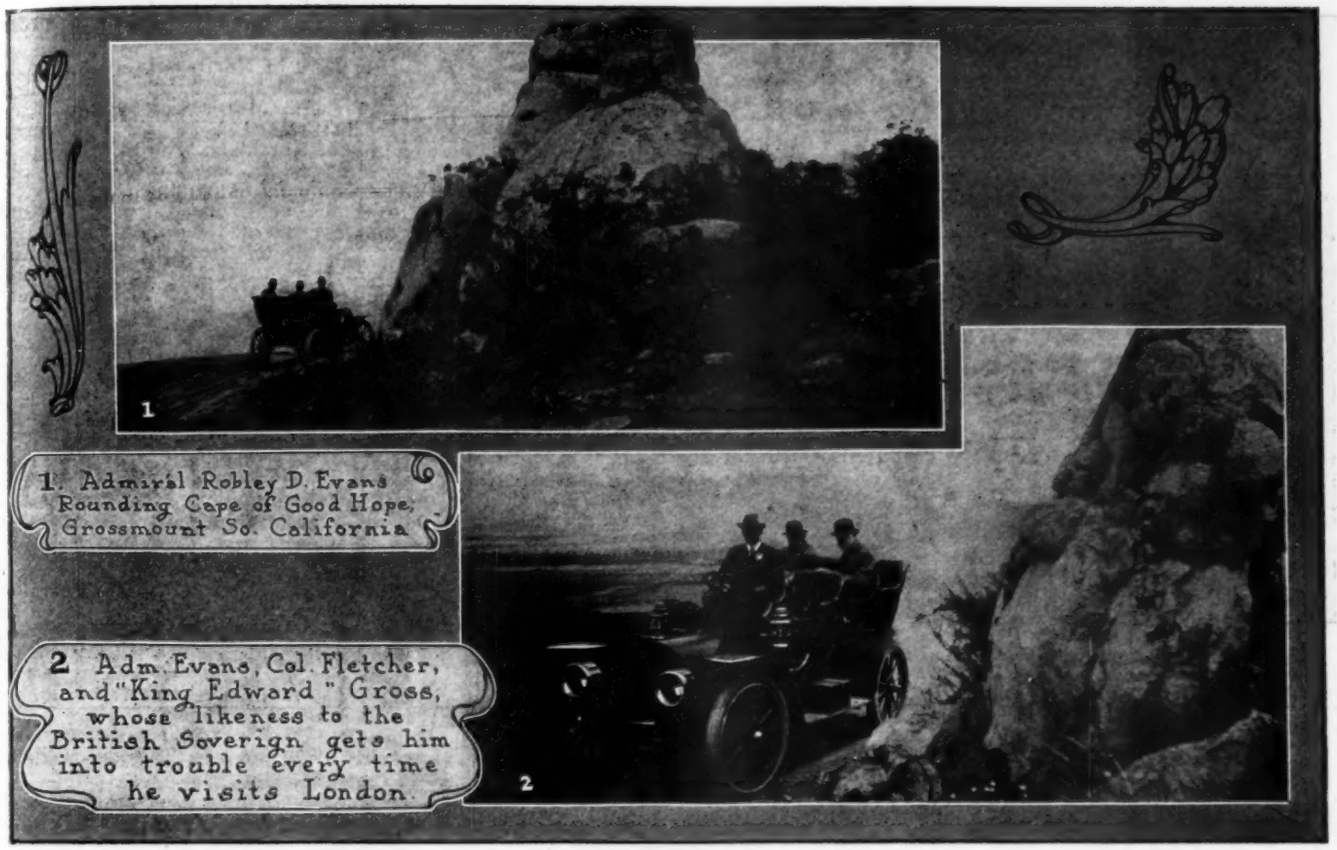
The Minneapolis Motor & Truck Company has recently been organized to market its own product consisting of trucks and pleasure cars designed especially for the use of the farmers. The firm is capitalized at $100,000, and is engaged now in building a factory. Its first models have appeared and have met with favor.

Jersey City, N. J.—One of the finest garages in New Jersey will be the new home of the Crescent Automobile Company in September. The new building is on the site of the old one, at the Boulevard and Duncan avenue, and will be three stories high, 70 feet wide and 100 feet long. The first floor will be used for offices, show rooms and garage; the second will be used for storage purposes; and the top, for a repair shop. The agency for the Cadillac, Peerless and Pope-Hartford is held.

Baltimore—A handsome garage at 1113-15 East Mount Royal avenue has just been completed, and is occupied by the Zell Motorcar Company, formerly on Morton street. The building is of steel, concrete and brick, 50x100 feet, three stories high. It is attractive in appearance, with a front of tapestry brick.

How Two Enthusiastic Maxwell Owners Solved the Vacation Problem in a Unique and Enjoyable Manner.

With a family of moderate means the vacation problem is always a perplexing one. The illustration shows how R. L. Shipman and F. C. Edminister managed to have the best time ever, touring Central New York with their families, the party including three adults, six children, and the dog "Flip."



1. Admiral Robley D. Evans Rounding Cape of Good Hope, Grossmount So. California

2 Adm. Evans, Col. Fletcher, and "King Edward" Gross, whose likeness to the British Soverign gets him into trouble every time he visits London

AUTOING ROUND "THE CAPE" WITH AN ADMIRAL

By JAMES A. CRUIKSHANK

FIFTY years at sea have only served to make Rear Admiral Robley D. Evans, the beloved "Fighting Bob" of the American navy, the keener lover of the beauties of the land and the joys of speedy travel over perfect roads. For a man who has seen and participated in all the great naval progress of the past half century, the Admiral is one of the most progressive enthusiasts over the newer method of land cruising that could be found. Last Winter, after the cruise of the Atlantic Squadron from Hampton Roads to San Francisco, the Admiral, relieved of his command by the stern decree of his doctors, began an overland cruise from the Pacific coast to the Atlantic. This was partly in response to requests for lectures and addresses and partly for the purpose of seeing many sections of the United States which he had never before visited.

He did not take his departure for the East, however, until he had spent many weeks in Southern California. That region is indeed an automobiling paradise, and no single spot there is better adapted to the pleasures of the sport than the charming little city of San Diego. Some of the trips to be found in that vicinity are unsurpassed by anything of their kind on the continent; for instance, the journey to the Old Mission, or the day's run about exquisite Point Loma, where the Theosophists have their headquarters. Such distinguished people as A. G. Spalding, the baseball magnate; John D. Spreckels, the sugar king, and Lyman J. Gage, ex-Secretary of the Treasury, have settled here, and world-famous stretches of road are being built of disintegrated granite.

But without doubt the most interesting trip in this region is to the summit of Grossmount, some twenty-five miles to the west of San Diego. Such, at least, was the opinion of Admiral Evans. Grossmount is primarily the result of the daring engineering skill of Col. Ed Fletcher of San Diego, a Westerner with faith in himself and his wonderful country, who saw the place, scaled its heights in hobnailed boots and came back with a road drawn on his cuff. It was not long before that road began to eat its way into the solid rock of that titanic upheaval, amid which the luxuriant vegetation which only California knows grows as in a garden. In association with Col. Fletcher came another Californian, "King Edward" Gross, whose striking resemblance to the sovereign of England gets him into trouble every time he goes to London. These two men finally drove that wonderful piece of road-building clear to the inspiring heights of the summit, providing their city and its visitors with one of the most superb views on the continent. Mile after mile of checkered farm land lies at the feet of the spectator, and to the far east and north rise the snow-capped peaks which are the perpetual delight of the dweller in the sunshine below.

This road is so tortuous, so daring in its swings around the edges of precipitous cliffs and jagged ravines, that it has the superlatives crowding the expressions of the traveler every half mile. It is as smooth as a billiard table, being made of that disintegrated granite, which, next to the shells of the sea, makes the finest road mankind has so far discovered. The apotheosis of this superb climb is found in the "rounding of Cape Horn," a jagged bunch of geological odds and ends grouped close to the summit of the peak. Here the wind gods hold high carnival, and the road is so narrow that but one machine can use it at the time. But a true Westerner never knows when to slow down. When Admiral Evans made this trip, Col. Fletcher, who was chauffeur, swung his Franklin round those dizzy heights in such fashion that he could not restrain exclamations of surprise. Finally the grizzled veteran of the sea paid the skillful driver one of his characteristically quaint compliments.

"Young man," said he, "I appoint you herewith chief steersman of the swiftest torpedo craft in the United States Navy. You surely know your job."

Breaking Ground for Addition to Overland Plant at Toledo, O.

Quick Work in Building Factory—Ground has just been broken for the five-story, 100 by 600 foot addition to the Overland plant at Toledo, O., to be used by the finishing department. The photograph was taken two days after the contract was let, and gives only a small idea of what was actually going on, as it was said that at the time there were 500 men and 100 two-horse teams at work. On taking possession of the Toledo plant the Overland Company found itself handicapped in various directions. The shipping facilities were entirely inadequate, especially in view of the prospective output of 80 cars a day. New spur tracks and sidings had to be run in and platforms and shipping rooms built. The brick building shown in the background of the photograph was especially built for the construction of radiators, frames, oilers and other parts. Many thousand dollars' worth of old machinery was scrapped, to be replaced by later and more modern equipment. When it was found that more room was needed for the finishing department plans for a new building were drawn and a contract was let calling for delivery, ready for occupancy, within 40 days.

Rushmore to Build Again—The Rushmore Dynamo Works, of Plainfield, N. J., has extended its capacity by the erection of a large fireproof storehouse, and will soon break ground for a two-story 50 by 200 concrete addition to the machine shop. In addition to over 300 horsepower already supplied by the power plant, a 125-horsepower gas engine is to be installed soon. One entirely new department has been added, for the silvering of lenses; this enables the factory to make its lenses complete from the rough discs to the finished product. As these lenses are not made from the ordinary "green" glass, but from annealed optical lead glass, the economy resulting from the saving of the optical manufacturer's product is an important item.

Trucks on Maintenance Contract—The Rainier Motor Truck Company, recently organized, is to act as agent for the Reliance commercial cars in New York City and proposes to offer purchasers a maintenance contract, whereby, for a stated sum per year, the trucks it sells will be kept in repair and their operation guaranteed for a term of years. John T. Rainier, P. N. Lineberger and G. C. Comstock are the incorporators of the new company. Messrs. Rainier and Lineberger were among the first to introduce electric trucks in New York City on a large scale. A garage will be opened at Fifty-first street and Twelfth avenue and trucks of 2½, 3½ and 5-ton capacity will be sold, with bodies to suit the purchaser.

Prepares for Moon Visitors—Several hundred Moon owners are expected to drive to St. Louis to witness the Centennial week celebration, October 4 to 9, and the Moon Motor Car Company has been making arrangements to welcome them to the city. The company will provide for their entertainment, and will award trophies to those making the longest runs. All the Moon cars available in the city, as well as the visitors, are expected to participate in the automobile parade on October 9. The Moon Company has announced that it will gladly furnish any information or aid possible to prospective visitors.

Mason Meets Its Waterloo?—The Mason Automobile Company, of Des Moines, Ia., has definitely arranged to move to Waterloo, Ia., and expects to be settled in the latter city by the end of October. The capital of the company has been increased to $500,000. The new plant at Waterloo comprises three buildings, 100 by 300, 120 by 160 and 70 by 120, and it is planned to make further additions to the available space. As an evidence of confidence in the Mason the citizens of Waterloo placed an order for 100 1910 cars.

The Better the Road the Better the Car—In the official program of the National Good Roads Convention at Cleveland there appeared this advertisement by the Knox Automobile Company:

"Put us down as being for good roads. The better the road the better the car, and conversely, the better the car the better the road. We are constantly working to better the car, but we are with you on the other end of the proposition."

Big Deal in Northwest—It is reported that C. F. Van Sicklen, sales manager for the Fal Motor Company, Chicago, has just closed a big agency contract with the Northland Motor Car Company, of Minneapolis, which calls for 950 cars. The company is composed of W. D. Rightmire and Harold Vorce, the only other car handled being Stoddard-Dayton. Although in receipt of over thirty orders from that city, the big contract requirement took Van Sicklen's breath away.

First Taxicab in Montreal—The first taxicab to make its appearance on the streets of Montreal attracted considerable attention. It is the first of a large number to be placed in operation by the Berna Motors and Taxicabs, Ltd. W. P. Kearney, the manager, said that regular service would not begin till next Spring, as it had been found necessary to have motors specially constructed to overcome the steep grades of the city.

Thomas to Use Truffault—The use of Truffault-Hartford shock absorbers on Thomas cars during the last season has proved so satisfactory that the Thomas Company has decided to specify them as stock equipment on its entire 1910 product. This announcement is of interest, in view of the growing tendency among manufacturers to sell their cars completely equipped for the road.

Canadian Bank Uses Auto—The Bank of Montreal is now using an automobile to convey its messengers with money and documents between the head office and the branches in the city. The messengers' headgear is not unlike the German army cap, and when three or four of the boys get into the car it looks as though the Kaiser's bodyguard had come to town.

Olds Increases Capitalization—The capital stock of the Olds Motor Works, according to amended articles of incorporation filed with the Secretary of State of Michigan, has been increased from $2,000,000 to $4,000,000. The reason for this increase has not been disclosed, but it is supposed that it is a part of the plan of reorganization of General Motors.

For the Suppression of Noise—The Xargil Mfg. Co., of Utica, N. Y., a manufacturer of mufflers for automobiles and motor boats, will move into a new plant on October 1. It will then be located in a large three-story building at 34-38 Broadway, Utica, which, it is said, will be the largest plant in the country devoted exclusively to mufflers.

Hupmobile Pleases the Owls—The Hupmobile carried off the principal honors at the race meet held at Chillicothe, O., September 23, under the auspices of the Order of Owls. The races were held on the 1-2-mile track at the county fair grounds, and in spite of unfavorable conditions the time was fairly fast.

First Aid for Marylanders—The W. W. Garage & Machine Company, of Cumberland, Md., is building a "trouble wagon," driven by a 40-horsepower motor, which will carry a full shop equipment, spare wheels, parts, etc., for the relief of machines broken down on the road.

I. H. C. Now at Tiretown—The International Harvester Company has announced that henceforth the old plant of the Buckeye Mower & Reaper Company at Akron, O., will be used for the manufacture of I. H. C. automobiles of the high-wheel type.

IN AND ABOUT THE AGENCIES

Reo and Premier, Cleveland—These cars will be represented by an agency to be known as the Cook Motor Sales Company, which will occupy two floors of the building nearly completed on Euclid avenue above Twenty-second street. It is expected that 1910 models will be on exhibition there by October 1.

Apperson, Boston — Sales Manager George H. Strout has announced that the Apperson will be represented in Boston by W. L. Russell, who will establish temporary quarters at 369 Atlantic avenue. Later an office will be opened on Massachusetts avenue.

Stearns, Minneapolis, Minn.—A. G. FitzGerald and J. F. McKanna have formed the FitzGerald Selling Company, to handle the Stearns line in Minnesota, the Dakotas, upper Michigan and northern Wisconsin, with headquarters in this city.

Oldsmobile and Oakland, Atlanta, Ga.—The Olds-Oakland agency in this city is now settled at its new quarters at 132 Peachtree street. The garage, however, will continue at the old location on Auburn avenue.

Stewart Speedometers, Chicago—The Stewart & Clark Mfg. Co. has leased the building at 1312 Michigan avenue, formerly occupied by the Cadillac agency, and will take possession December 1.

Oldsmobile, Brooklyn, N. Y.—The A. W. Blanchard Company, 342 Flatbush avenue, which already holds the agency for the Waverley and the Herreschoff, has decided to take on the Oldsmobile.

Stoddard-Dayton, Minneapolis, Minn.—The Northland Motor Car Company has been formed by W. D. Rightmire and Harold Vorce to handle the Stoddard-Dayton in the Northwest.

National, Houston, Tex. — Clarence Martindale will handle the National here at 406 Scanlan Building. His territory will include Galveston, Beaumont and San Antonio.

Stearns, Detroit—The Palmer Auto Company has been agent for the F. B. Stearns Company, of Cleveland, and will handle the Stearns exclusively in this city.

Haynes, Boston—H. C. and C. D. Castle, the Lozier agents, have secured the New England agency for the Haynes, formerly handled by C. S. Henshaw.

Midland, New York City—The Midland Company of New York, which sells the Midland in the metropolitan district, is now located at 1851 Broadway.

Continental Tires, Boston—E. H. Kidder, resident manager of the Continental Caoutchouc Company, has opened his new office at 895 Boylston street.

Empire, New York City—The Poertner Motor Car Company, agent for the National, has decided to add to its line the new Empire "20" runabout.

Moon, Minneapolis—The agency for the Flour City has been taken on by the Segerstrom Auto Company, now handling the Rider-Lewis Six.

Jackson, Hartford, Conn.—A. E. Kilby has taken the agency of the Jackson, which was formerly held in this city by A. E. Lazarro.

PREMIER AGENTS AT THE HOME BASE

INDIANAPOLIS, Sept. 27 — Thirty-two agents of the Premier Motor Mfg. Co., coming from every large city between the Atlantic and the Pacific, were entertained here last week. It was a school of instruction as well as a sociable gathering. The agents were taken through the factory, shown the 1910 models, and loaded up with selling points for the coming year. A banquet was also given them at the Denison Hotel, at which H. O. Smith, president of the Premier Company, was toastmaster. The speakers included President Smith, Mayor Charles A. Bookwalter, R. I. Eads, Webb Jay, Charles Davis, Henry Eitel, of the Indiana National Bank; R. W. Macy and J. B. Orman. Later a sightseeing trip was made to French Lick; five of the cars used had been completed in the factory the preceding day and were untested.

MORLEY JOINS FORD COMPANY

DETROIT, Sept. 27—Walter G. Morley has succeeded H. C. Limbach as purchasing agent of the Ford Motor Company of this city. Mr. Morley is a pioneer in the gas engine and automobile field, having

Walter G. Morley

been connected with the Olds Gasoline Engine Works in the early days of the industry. When the Olds Motor Works plant was opened in Detroit in 1898 he was the purchasing agent. He has since been connected with the Aerocar Company, and as manager of the Canadian interests of the Reo Motor Company, located at Windsor, Ont. When this branch was discontinued Mr. Morley embarked in business for himself as a parts manufacturer. This business he has only recently given up to take his new position with the Ford Company.

FROM INDIANAPOLIS TRADE CIRCLES

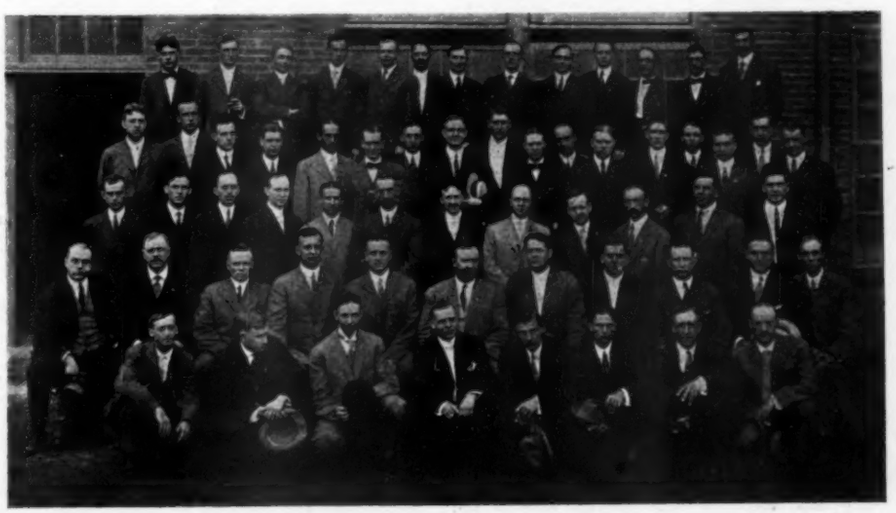
INDIANAPOLIS, Sept. 27—During the last week a number of new companies have been organized in this city, and many old-established concerns have made arrangements to increase their business during the coming season. Probably the most important of the new local companies is the Coesir Tire & Rim Company, which has been organized with a capitalization of $100,000 for the purpose of manufacturing a clincher tire invented by John L. Coesir.

The Maxwell-Briscoe Motor Company has leased a site at Illinois and Vermont streets, on which it proposes to erect a three-story sales branch building, at a cost of $60,000. A reorganization of the Cadillac Automobile Company of Indiana has been effected, and the name changed to the Peck Motor Car Company. The company has leased a building at 322-324 North Delaware street, which it will occupy immediately. Roy Shaneberger, John A. George and Oliver Shaw have organized the Reliable Auto Exchange and will open a salesroom.

At Richmond, Ind., the organization of the Pilot Motor Car Company has been completed with $100,000 capital stock. It will manufacture a line of gasoline cars. The automobile business which has been conducted at Anderson by John D. Clark has been reorganized under the name of the Clark Motor Car Company, and the plant has been moved to Shelbyville, Ind.

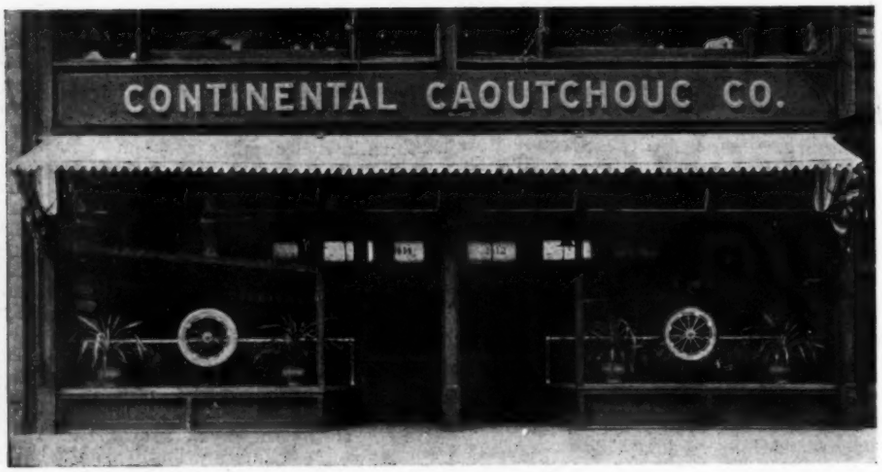
POPE COMPANY DECLARES DIVIDEND

HARTFORD, CONN., Sept. 27—At the meeting of the directors of the Pope Mfg. Co., held in New York City, a dividend of 6 per cent. was declared for the fiscal year ending July 31, payable September 30. When the new company was organized and new stock issued, the preferred stock carried cumulative dividends dating from August 1, 1908. The new company only began business December 24, 1908, so that it has made up a year's dividends in seven months—a record which speaks well for the management of the directors and for the business being done by the company. A further dividend, the quarterly from August 1 to November 1, was also declared, amounting to 1½ per cent. and payable November 1.



Sixty-One of the Eighty Firestoneites That Attended Convention

The annual convention of Firestone Tire & Rubber Company representatives, held recently at the factories of the company, at Akron, O., was the largest gathering of the Firestone selling force that has been held. There was plenty of enthusiasm over next season's prospects and an enjoyable time was interspersed with the business sessions



Chicago Branch House Where Will Be Met Western Demand for Continentals

CONTINENTAL OPENS CHICAGO BRANCH

CHICAGO, Sept. 27—The Continental Caoutchouc Company, maker of Continental tires and demountable rims, has opened a branch at 1412 Michigan avenue, in this city, which is one of the most attractively arranged automobile tire stores on automobile row. This branch will supply owners, dealers and manufacturers throughout the Middle West and has been established to care for the growing demand for Continental products. C. A. Gilbert, the resident manager, is always glad to welcome the automobiling public, and visitors are assured of courteous treatment and prompt fulfillment of their requirements.

PERSONAL TRADE MENTION

Walter A. Woods has been appointed manager of the New York City sales department of the Rainier Motor Company, with headquarters at Broadway and Sixty-fourth street. For the past season Mr. Woods has been connected with the New York branch of the E. R. Thomas Motor Company. He is a veteran salesman, with an extensive acquaintance of local trade conditions, and will conduct an energetic campaign for the Rainier for the coming season.

John E. Kay has been appointed assistant manager of the Maxwell-Briscoe Southern Company, at Atlanta, Ga. He was formerly with the Maxwell-Briscoe Motor Company at the Tarrytown, N. Y., factory.

K. T. McKinstry, formerly connected with the sales department of the Columbus Buggy Company, Columbus, O., has accepted a similar position with E. D. Crane & Company, of Atlanta, Ga.

F. H. Banbury, of the Acheson Oildag Company, Niagara Falls, N. Y., sailed for Europe September 25 to attend to the patent interests of his company.

William T. White has resigned his position with the Roebling Company to act as manager of the Mercer Automobile Company, another Roebling enterprise.

RECENT TRADE PUBLICATIONS

Peerless Motor Car Company, Cleveland—A wonderfully beautiful booklet, one of the finest productions imaginable, has just been issued by the Peerless Motor Car Company to illustrate its enclosed cars for 1910. In harmony with the luxuriousness of the subject, and of the high class of trade which will thereby be reached, the book is really a work of art. The illustrations are fascinating in their coloring and clearness, and the typography is splendid. Printed on heavy, embossed paper, with a cover of brown printed in gold and a touch of red, with the colors on the inside pages, this is an edition of which any concern might be justifiably proud. Those pictures which are intended to show the comfort of the limousine and landaulet as compared with that of persons traveling in snow and rain, either on foot or in cabs, are so much better than ordinarily seen out of the most expensive art books and magazines that they are especially noticeable. In all of these the principal car is the Peerless and the representations are so accurate, even in the most minute detail of automobile construction, that they are particularly pleasing. The cars themselves are fittingly shown, exterior and interior, and from several angles, while the tables indicating the size of the doors, height of the interior, size of the seats, and other similar details, give the correct idea of the machines at once. The specifications for inclosed bodies on both the four and six-cylinder chassis are included.

Pierce-Arrow Motor Car Company, Buffalo, N. Y.—"The Seal on the Door" is the title of the latest book issued by the Pierce-Arrow Motor Car Company, and it is "a symbol with historic suggestion," according to the statement on the first page. Two Pierce-Arrow cars are being used in the Presidential service at the Executive Mansion in Washington, and the story, written for the Pierce makers by John Foord, is a clever and dainty bit of history interwoven with former and present methods of locomotion for the Chief Magistrate and his family. The booklet is handsomely printed in black and colors, bound in a cream-colored, heavy paper, and the creamy effect pervades the interior also. The illustrations are impressionistic and appeal to the artistic, with their splashing of colors distinctively Washingtonian. The tale is an interesting one, not at all being a suggestion of advertising, for it is one dealing with scenes from the life of the White House taken from a period of slightly over a hundred years, and the episodes perhaps are those which do not often come to light. As compared with the days of old, when the coaches were not perhaps the best even for the President, are the circumstances now, when the two Pierce-Arrows, one of 36 and the other of 48 horsepower, are used by the occupants of the big house at the end of Sixteenth street. Both of these cars have the great seal of the United States painted upon their doors—the first time it has ever adorned the Executive equipage.

Hartford Auto Parts Company, Hartford, Conn.—Hartford universal joints and driveshaft assemblies are favorably known in the trade and are used on many high-priced cars, so that this catalog assumes in some measure the importance of a compendium of engineering practice. Unlike the policy of some makers, who make the construction of their products a jealously guarded secret, the Hartford Auto Parts Company shows mechanical drawings, apparently reproduced from the original blue-prints, of each type of joint and shaft it manufactures, fully dimensioned and with all necessary data. Such frankness cannot help making a favorable impression on the engineer, who is keenly interested, and with good reason, in just these points which are so often concealed. The Hartford joints are made in sizes to transmit from 20 to 60 horsepower of the double yoke and cross-piece type, for driveshaft use, and also in special designs for couplings between the clutch and gear-box. The company specializes on complete driveshaft assemblies, with two joints, one sliding, and a shaft of any desired length between centers. The front joint may be provided with a brake drum. Shaft sizes range from 1⅛ to 1⅝ inches in diameter. The catalog consists of eighten loose sheets, each illustrating a single size or type.

Kellogg Mfg. Co., Rochester, N. Y.—Tire pumps of every possible variety are shown in the eight-page catalog issued by this concern. First on the list is the familiar compound hand pump, which is claimed to handle nearly twice the volume of air of an ordinary type. Another old stand-by is the quick-detachable engine-driven pump. An innovation in the pump line, however, is the new four-cylinder model, which seems to embody every latest improvement. It is furnished with a jaw clutch on the drive shaft, and either a gear or sprocket for the engine connection. All working parts un in oil. For use in garages there is a two-cylinder pump driven by an electric motor through a worm and gear. The motor is of 1-6 horsepower, either direct or alternating current, and may be connected to a lamp socket, for which purpose it is provided with 12 feet of cable. Twelve feet of tubing is also supplied, with a safety valve to prevent excessive pressure. As the outfit weighs but 40 pounds, it may easily be carried around the garage.

Lawrence Portland Cement Company, New York—In view of the extensive use of cement and concrete in garage construction, automobile owners should be interested in the booklet of the maker of "Dragon" Portland cement, which is favorably known in building circles. This booklet, issued from the sales offices at 1 Broadway, New York, really is a technical treatise on the uses of cement in every form. It gives specifications for standard mixtures of concrete, methods of testing, and information as to its proper employment. Readers of "The Automobile" will be interested in details of the construction of the Thirty-ninth Street Building, in which the editorial offices and press rooms of the magazine are located. This building is a fine example of the possibilities of concrete construction, as it is eleven stories high and contains many heavy printing presses.

Winton Motor Carriage Company, Cleveland—The Winton Six Upkeep Book, the second annual edition, has been issued to show the records of the Winton cars winning prizes for low cost of maintenance. The booklet is very artistically compiled and the statements of the judges and of those who won are very interesting. That a car can be driven for 17,003 miles without a cent being paid for repairs is wonderful. Other sets of figures are of equal importance. In each case of the ten, the details of the records kept for eight months are given, sworn to by both the chauffeurs and owners. It is especially noteworthy that the first three prize winners this year were not new machines, and these facts are well brought out in the edition.

American Tap & Die Company—Catalogue No. 3 of the American Tap & Die Company, of Greenfield, Mass., has recently been issued and is of special interest to the automobile manufacturers and trade. It illustrates threading tools, such as taps, dies, tap wrenches, die stocks, screw plates, etc., and gives a list of the various sizes in which these are made. There are now screw plates produced in the A. L. A. M. sizes, a move which will be welcomed by the autoists. The catalogue itself is a handy one to have where such tools are required, for by a systematic arrangement of head and foot notes there is no time wasted or trouble in looking for any certain part, and for its exact description.

Cox Brass Mfg. Co., Albany, N. Y.—This company makes a specialty of automobile brass work, and has issued a small catalog devoted exclusively to this line. There are included six different types of tire holders, at varying prices; almost as many designs of robe rails and foot-rests, and lamp brackets to suit everybody. This company also makes a compound tire pump of the lever type for garage use, and a lighter plunger pump. For use with liquid carbonic gas tanks there is furnished a new pressure reducer and regulator.

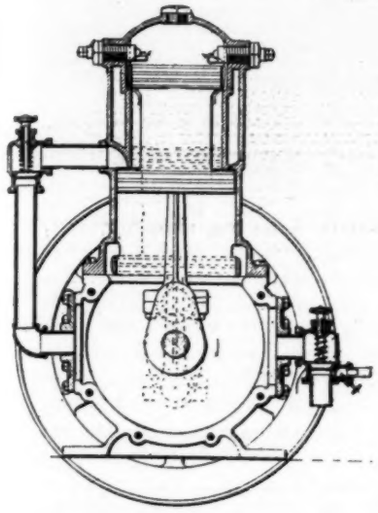
Firestone Tire & Rubber Company, Akron, O.—An artistic book on the subject of 1910 demountable rims for quick detachable and clincher tires is being distributed by the Firestone Tire & Rubber Company, Akron, O. The book illustrates the operation of tire-changing with these rims and explains why the Firestone company has discarded its demountable rims requiring clincher tires exclusively, in favor of the new Firestone demountable rims, which permit of repeated tire changes on the road.

SOME SELECTED AUTO PATENTS

Issue of Sept. 7, 1909

933,109. Gas Engine—Frederick W. Reeves, Pittsburg, Pa. Filed Feb. 22, 1908.

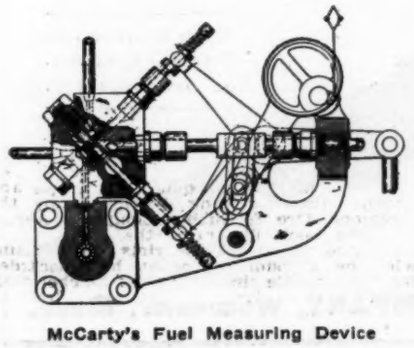
This two-cycle engine seems a rather complicated embodiment of the differential piston idea. It consists of a compression chamber, to be swept through by the larger end of the piston, and a combustion chamber above the piston. The middle part of the piston is smaller in diameter than either end, and the space between it and the cylinder wall is called the secondary compression chamber. The fresh gas is first drawn into the crankcase, thence transferred through a by-pass into the compression chamber. As the piston rises the gas is compressed, at the same time that the exhaust gas is being driven out of the combustion chamber. When the piston is nearly at the top of its stroke it uncovers a series of by-pass ports, through which the fresh gas is transferred around the piston into the combustion chamber.



Concentric Piston Engine by Reeves

933,325. Fuel Feeder for Internal Combustion Engines—Norman McCarty, Indianapolis, Ind. Filed Feb. 9, 1909.

Direct fuel injection into the combustion chamber of oil engines has become prominent of late, especially in aeronautic motors, as this method, dispensing with the carbureter, has been used on the Wright motors and on several foreign eight-cylinder machines. The device under consideration is positively operated by an eccentric and provides means for varying the charge considerably. It consists of three chambers, the inlet, the measuring, and the outlet, with valves between the first and second and the second and the third, all ingeniously operated by the same eccentric. A movable plunger is fitted in the measuring chamber to vary its capacity.

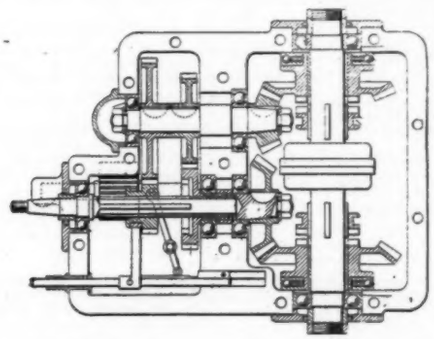


McCarty's Fuel Measuring Device

Issue of Sept. 14, 1909

933,870. Change-Speed Gearing—Austin M. Wolf, New York City. Filed Nov. 13, 1908.

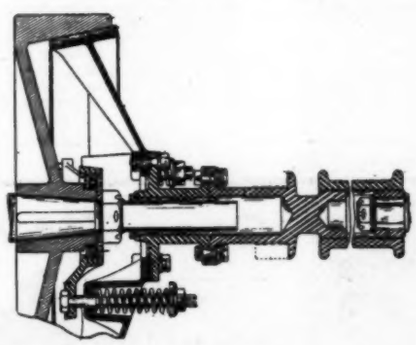
Mr. Wolf's gear, a four-speed selective one, is of the double bevel gear type, suitable for use on cars with double-chain drive or on the rear axle of shaft-driven cars. The two opposed bevel gears on the cross-shaft are normally free, but can be locked to the shaft by jaw clutches. There is but one sliding gear, which has three positions. That to the left gives the reverse; the central position gives the first and second, according to which of the bevel gear pairs are used, and in the same way the position to the right gives the third and fourth. The power is transmitted through two pairs of spur gears on the second, through one pair on the first and third, and through none (direct drive) on the fourth. The only objection is the number of shafts and gears revolving idly.



Four-Speed Transmission—Double Bevels

934,043. Coupling for Power Transmission—Howard E. Coffin, Detroit, Mich., assignor to the Chalmers-Detroit Motor Company. Filed Nov. 6, 1908.

A sliding coupling to be used between the clutch and the change-gear of an automobile forms the subject of this patent. The specifications call for a member detachably secured to the clutch-sleeve forming an extension thereof beyond the clutch spindle, no longer than the distance between the end of the clutch spindle and the primary gear shaft, the rear end of the extension forming the male member of a flexible coupling, and a coupling sleeve telescoping over the end of the extension and the end of the gear shaft. The object is to enable the clutch to be removed without disturbing the engine or change-gear.



Chalmers-Detroit Cone Clutch

934,140. Universal Joint—Daniel Corcoran, Yonkers, N. Y. Filed Aug. 14, 1908.

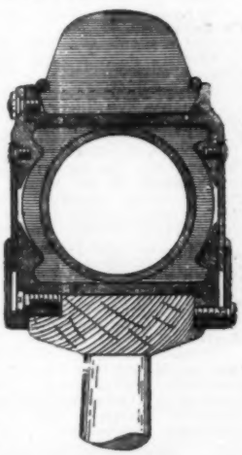
The shaft ends are rounded and slotted across their faces, and carry between them a disc with flanges on either side which enter into the slots. As the flanges are in perpendicular planes a universal motion is allowed. The joint is held together by annular slots in the flanges through which pass pins supported in the shaft ends. The turning effort is taken by the flanges, acting in shear. The joint seems especially adapted to use in cases where an Oldham coupling is usually specified; in fact, it seems to be really an adaptation of this form of coupling to give a greater possible range of angular movement.

Flanged Disc Type of Universal Joint

Issue of Sept. 21, 1909

934,472. Tire—John S. Stevenson, Detroit. Filed Dec. 23, 1907.

This tire arrangement is somewhat similar to a number of the tires brought out in France by the last tire and wheel trials, in that it consists of a solid tire mounted upon the exterior of a sliding member, the latter carrying within itself a resilient tire, either pneumatic or cushion, which limits the yield of the solid exterior tire and the slidable felloe. Except for the contact of the yielding (and from its nature, soft) rubber member with the metal all along its side, the design seems to possess merit, at least, for heavy vehicle purposes. The flaw in the construction seems to lie in the large distance from the wooden felloe, which is the real support, to the outer solid tire, which is the point of application of all road stresses. In other words, the lateral strength is small.



New Cushion Tire

934,547. Braking Means for Automobile Vehicles—Arthur Krebs, Paris, assignor to La Société Anonyme des Anciens Etablissments Panhard et Levassor, Paris. Filed Feb. 15, 1908.

This is the well-known Panhard braking device, which consists of additional cams mounted upon the exhaust camshaft. The latter is slidable longitudinally, so that the auxiliary cams may be brought under the valves. When so located, the exhaust valve is opened very little or not at all, depending upon the position of the cam, which is of varying contour. In this way the exhaust gases are retained in the cylinders, and the power is expended in pumping them.

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